Washtenaw Community College

2017-2018 Bulletin

Programs and Courses for 2017-2018

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Accreditations

Institutional Accreditations

Washtenaw Community College

accredited by
The Higher Learning Commission
230 South LaSalle Street, Suite 7-500
Chicago, IL 60604-1411
800-621-7440
www.ncahlc.org
For information on Washtenaw Community College, contact WCC at (734) 973-3300.

Children's Center

accredited by
NAEYC Academy for Early Childhood Programs
1313 L Street NW, Suite 500
Washington, D.C. 20005
202-232-8777
800-424-2460
www.naeyc.org/accreditation

Program Accreditations

Automotive Service Technology AAS Degree
Automotive Services Technician Certificate
Auto Body Repair Certificate
Collision Repair and Refinish Technician Advanced Certificate

certified by
National Automotive Technicians Education Foundation
101 Blue Seal Drive, Suite 101
Leesburg, Virginia 20175
703-669-6650
www.natef.org

Culinary and Hospitality Management AAS Degree

accredited by
American Culinary Federation
180 Center Place Way
St. Augustine, FL 32095
800-624-9458
www.acfchefs.org

Accreditations

Dental Assisting Certificate

accredited by
The Commission on Dental Accreditation of The American Dental Association
211 E. Chicago Avenue, Suite 1900
Chicago, Illinois 60611-2678
312-440-2500
www.ada.org

Economic and Community Development Division

Washtenaw Community College's Economic and Community Development Division is accredited by the International Association for Continuing Education and Training (IACET). WCC complies with the ANSI/IACET Standard, which is recognized internationally as a standard of excellence in instructional practices. As a result of the accreditation, WCC is authorized to issue the IACET CEU.

International Association of Continuing Education and Training (IACET)
12100 Sunset Hills Road
Suite 130
Reston, VA 20190
Phone: 703-234-4065
Fax: 703-435-4390
Info@IACET.org
www.iacet.org

Heating, Ventilation, Air Conditioning and Refrigeration (HVACR) AAS Degree
HVACR – Residential Certificate
HVACR – Commercial Trade Advanced Certificate
HVACR Industrial Trade Advanced Certificate

accredited by
HVAC Excellence
1701 Pennsylvania Ave NW
Washington, DC 20006
Phone: 847-342-9810
Toll Free: 800-394-5268
Fax: 800-546-3726
www.hvacexcellence.org

Accreditations

Law Enforcement Basic Police Academy

approved by
The Michigan Commission on Law Enforcement Standards
106 W. Allergan Auite 600
P.O. Box 30633
Lansing, Michigan 48909
517-322-1417
www.michigan.gov/mcoles

Registered Nursing AAS Degree

accredited by
ACEN (Accreditation Commission for Education in Nursing)
3343 Peachtree Road NE, Suite 850
Atlanta, GA 30326
Phone: 404-975-5000
Fax: 404-975-5020
www.acenursing.org

approved by
State of Michigan
Department of Community Health
Bureau of Health Professionals
Board of Nursing
611 W Ottawa
P.O. 30670
Lansing, MI 48909-8170
517-335-0918
www.mi.gov/mdch

Pharmacy Technology Certificate

accredited by
The American Society of Health-System Pharmacists
7272 Wisconsin Avenue
Bethesda, MD 20814
301-657-3000
www.ashp.org

Accreditations

Physical Therapist Assistant AAS Degree

accredited by
Commission on Accreditation in Physical Therapy Education
American Physical Therapy Association
1111 North Fairfax St
Alexandria, VA 22314-9902
703-706-3245
www.capteonline.org

Radiography AAS Degree

accredited by
Joint Review Committee on Education in Radiologic Technology
20 North Wacker Drive, Suite 2850
Chicago, IL 60606-3182
312-704-5300
www.jrcert.org

General Education Requirements

General Education Course Requirements

Students pursuing associate degrees are required to meet general education requirements in eight areas. Some classes are limited to a specific certificate or degree; check the footnotes when selecting courses. You should also check the requirements for your certificate or degree to determine if specific classes are required or recommended.

- Writing - Develop, organize, and express thoughts in writing using Standard English.
- Speech - Speak in an organized and effective manner and listen critically and with comprehension.
- Mathematics - Understand the applications and perform computations using the concepts of college-level mathematics.
- Natural Sciences - Understand principles and applications of modern science.
- Social and Behavioral Science - Understand principles and applications of social and behavioral science in exploring the dynamics of human behavior.
- Arts and Humanities - Understand and apply information related to the nature and variety of the human experience through personal and cultural enrichment.
- Critical Thinking - Demonstrate skill in analyzing, synthesizing and evaluating.
- Computer and Information Literacy - Demonstrate the skill to use computer information systems including using software and the ability to locate, retrieve, and evaluate networked information.

The general education requirements in Writing, Speech, Mathematics, Natural Sciences, Social and Behavioral Science, Arts and Humanities and Computer and Information Literacy are met through class distribution requirements (successfully completing classes from restricted distribution lists). Critical thinking is incorporated into the classes in the six content areas and does not require any additional class work.

Course Distribution Requirements

Associate degree students must complete courses from each of seven General Education content areas. The requirements vary, depending on which degree is being earned. The number of general education credit hours required for each degree is as follows.

	AA	**AS**	**AAS**
Writing	6-7 credits	6-7 credits	3-4 credits
Speech	3 credits	3 credits	3 credits
Mathematics	3-4 credits	3-4 credits	3-4 credits
Natural Sciences	3-4 credits	3-4 credits	3-4 credits
Social & Behavioral Science	6 credits	6 credits	3 credits
Arts and Humanities	6 credits	6 credits	3 credits
Critical Thinking *	0 credits	0 credits	0 credits
Computer & Information Literacy **	3 credits	3 credits	3 credits
	30-33 credits	30-33 credits	21-24 credits

* Critical thinking skills will be taught in all courses included in the other course distribution areas.
** Due to the computer intensive nature of many courses, students are encouraged to complete the Computer and Information Literacy requirement as early in their academic career as possible.

Students who have earned a bachelor's degree or higher from an accredited U.S. college or university may request a waiver of the general education requirements from Student Records.

Approved Courses for General Education in Writing

This information is from the 2017 - 2018 WCC College Catalog.

Course numbers marked in orange are available online.

Course Number	Course Name	Credits	Notes
ENG 100	Introduction to Technical and Workplace Writing	4	May be used for the AAS degree only
ENG 107	Technical Writing I	3	May be used for the AAS degree only
ENG 111	Composition I	4	
ENG 226	Composition II	3	

Approved Courses for General Education in Speech

This information is from the 2017 - 2018 WCC College Catalog.

Course numbers marked in orange are available online.

Course Number	Course Name	Credits	Notes
COM 101	Fundamentals of Speaking	3	
COM 102	Interpersonal Communication	3	
COM 142	Oral Interpretation of Literature	3	
COM 183	Persuasion	3	
COM 200	Family Communication	3	
COM 210	Nonverbal Communication	3	

Course Number	Course Name	Credits	Notes
COM 225	Intercultural Communication	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.

Approved Courses for General Education in Mathematics

This information is from the 2017 - 2018 WCC College Catalog.

Course numbers marked in orange are available online.

Course Number	Course Name	Credits	Notes
MTH 125	Everyday College Math	4	
MTH 148	Functional Math for Elementary Teachers I	4	For students following an elementary or early childhood education track only
MTH 149	Functional Math for Elementary Teachers II	4	For students following an elementary or early childhood education track only
MTH 160	Basic Statistics	4	
MTH 167	Math Applications for Health Science	3	For students in health programs only
MTH 169	Intermediate Algebra	4	
MTH 176	College Algebra	4	
MTH 178	General Trigonometry	3	
MTH 180	Precalculus	5	
MTH 181	Mathematical Analysis I	4	
MTH 191	Calculus I	5	
MTH 192	Calculus II	4	
MTH 197	Linear Algebra	4	
MTH 293	Calculus III	4	

Course Number	Course Name	Credits	Notes
MTH 295	Differential Equations	4	

Approved Courses for General Education in Natural Sciences

This information is from the 2017 - 2018 WCC College Catalog.

Course numbers marked in orange are available online.

Course Number	Course Name	Credits	Notes
AST 111	General Astronomy	3	
BIO 101	Concepts of Biology	4	
BIO 102	Human Biology	4	
BIO 104	Biology of Exercise	4	
BIO 107	Introduction to Field Biology	3	
BIO 109	Essentials of Human Anatomy and Physiology	4	
BIO 110	Introduction to Exercise Science	3	
BIO 111	Anatomy and Physiology - Normal Structure and Function	5	
BIO 142	Fundamentals of Nutrition, Exercise and Weight Control	3	
BIO 161	General Biology I Ecology and Evolution	4	
BIO 162	General Biology II Cells and Molecules	4	
BIO 201	Physiology of Exercise	4	
BIO 208	Genetics	4	
BIO 212	Pathophysiology: Alterations in Structure and Function	4	

General Education Requirements

Course Number	Course Name	Credits	Notes
BIO 215	Cell and Molecular Biology	4	
BIO 225	Tests and Measurements in Exercise Science	3	
BIO 227	Biology of Animals	4	
BIO 228	Biology of Plants	4	
BIO 237	Microbiology	4	
CEM 101	Introductory Chemistry	4	
CEM 102	Chemistry for Elementary Teachers	4	For students following an elementary or early childhood education track only
CEM 105	Fundamentals of Chemistry	4	
CEM 111	General Chemistry I	4	
CEM 122	General Chemistry II	4	
CEM 140	Organic Biochemistry	4	
CEM 211	Organic Chemistry I	4	
CEM 222	Organic Chemistry II	4	
ENV 101	Environmental Science I	4	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
ENV 105	Introduction to Environment and Society	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
ENV 201	Environmental Science II	4	
GLG 100	Introduction to Earth Science	4	
GLG 103	Field Geology	3	
GLG 104	Weather	4	

Course Number	Course Name	Credits	Notes
GLG 114	Physical Geology	4	
GLG 202	Earth Science for Elementary Teachers	4	For students following an elementary or early childhood education track only
GLG 276	Principles of Geographic Information Systems	3	
PHY 100	Physics for Elementary Teachers	4	
PHY 105	Conceptual Physics	4	
PHY 110	Applied Physics	4	May be used for the AAS degree only
PHY 111	General Physics I	4	
PHY 122	General Physics II	4	
PHY 211	Analytical Physics I	5	
PHY 222	Analytical Physics II	5	
SCI 101	The Nature of Science	3	May be used for the AAS degree only
SCI 102	Applied Science	3	For United Association students only

Approved Courses for General Education in Social and Behavioral Science

This information is from the 2017 - 2018 WCC College Catalog.

Course numbers marked in orange are available online.

Course Number	Course Name	Credits	Notes
ANT 201	Introduction to Cultural Anthropology	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
ANT 202	Introduction to Physical Anthropology	3	
ANT 205	Introduction to Archaeology	3	

General Education Requirements

Course Number	Course Name	Credits	Notes
ANT 265	Introduction to Forensic Anthropology	3	
ECO 110	Introduction to Economics	3	
ECO 211	Principles of Economics I	3	
ECO 222	Principles of Economics II	3	
ECO 280	International Trade and Globalization	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
GEO 101	World Regional Geography	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
HST 108	The Ancient and Medieval World	3	
HST 109	The Early Modern World	3	
HST 121	Ancient and Medieval Europe	3	
HST 122	Early Modern Europe	3	
HST 123	The Twentieth Century	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
HST 150	African American History	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
HST 200	Michigan History	3	
HST 201	United States History to 1877	3	
HST 202	United States History Since 1877	3	

General Education Requirements

Course Number	Course Name	Credits	Notes
HST 210	U.S. Women's History	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
HST 215	History of U.S. Foreign Relations	3	
HST 216	U.S. Military History, Colonial Times to Present	3	
HST 220	The Civil War Era, 1845 - 1877	3	
HST 225	World War II	3	
HST 230	History of the Holocaust	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
HST 235	African History	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
HST 240	The History of the Modern Middle East, 1798 - Present	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
HST 251	War in the Modern World, 1500 - Present	3	
HST 255	Making the Modern World	3	
HST 260	History of England to 1688	3	
HST 270	Modern China	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
PLS 112	Introduction to American Government	3	

General Education Requirements

Course Number	Course Name	Credits	Notes
PLS 150	State and Local Government and Politics	3	
PLS 211	Introduction to Comparative Government	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
PLS 220	Politics and the Media	3	
PLS 241	Guns, God and Ganja: U.S. Federalism	3	
PLS 250	Campaigns and Elections	3	
PLS 260	Introduction to Political Thought	3	
PLS 290	American Power in the 21st Century	3	
PSY 100	Introduction to Psychology	3	
PSY 107	African - American Psychology	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
PSY 150	Psychology of Work	3	
PSY 200	Child Psychology	3	
PSY 206	Life Span Developmental Psychology	4	
PSY 210	Behavior Modification	3	
PSY 220	Human Development and Learning	4	
PSY 240	Drugs, Society and Human Behavior	3	
PSY 251	Education of Exceptional Children	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.

General Education Requirements

Course Number	Course Name	Credits	Notes
PSY 257	Abnormal Psychology	3	
PSY 260	Introduction to Human Sexuality	3	
PSY 270	Social Psychology and Global Applications	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
PSY 296	Neuropsychology of Addiction	3	
PSY 297	Assessment of Co-occurring Disorders	3	
PSY 298	Treatment of Addiction	3	
SOC 100	Principles of Sociology	3	
SOC 202	Criminology	3	
SOC 205	Race and Ethnic Relations	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
SOC 206	Introduction to Gender Studies	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
SOC 207	Social Problems	3	
SOC 216	Introduction to Gender and Sexuality Studies	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
SOC 220	Group Dynamics and Counseling	3	
SOC 225	Family Social Work	3	
SOC 230	Marriage and Family	3	
SOC 250	Juvenile Delinquency	3	

Approved Courses for General Education in Arts and Humanities

This information is from the 2017 - 2018 WCC College Catalog.

Course numbers marked in orange are available online.

Course Number	Course Name	Credits	Notes
ARB 111	First Year Arabic I	5	
ARB 122	First Year Arabic II	5	
ART 130	Art Appreciation	3	
ART 131	Art Appreciation through Art Museum Experiences	3	
ART 143	African American Art and Culture	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
ART 150	Monuments and Cultures	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
CHN 111	First Year Chinese I	5	
CHN 122	First Year Chinese II	5	
COM 130	Introduction to Mass Communication	3	
DAN 180	Dance Appreciation: The World of Dance	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
DRA 152	Acting I	3	
DRA 180	Theatre Appreciation	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
DRA 208	Acting II	3	

General Education Requirements

Course Number	Course Name	Credits	Notes
DRA 240	Acting III	3	
DRA 260	Acting IV	3	
ENG 140	Horror and Science Fiction	3	
ENG 160	Introduction to Literature: Poetry and Drama	3	
ENG 170	Introduction to Literature: Short Story and Novel	3	
ENG 181	African-American Literature	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
ENG 200	Shakespeare	3	
ENG 211	American Literature I - Before 1900	3	
ENG 212	British Literature - Before 1800	3	
ENG 213	World Literature I	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
ENG 214	Literature of the Non-Western World	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
ENG 222	American Literature II - 1900 to the Present	3	
ENG 223	British Literature - After 1800	3	
ENG 224	World Literature II	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
ENG 240	Children's Literature	3	

General Education Requirements

Course Number	Course Name	Credits	Notes
ENG 242	Multicultural Literature for Youth	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
ENG 260	Journal Workshop I	3	
ENG 261	Journal Workshop II	3	
ENG 270	Creative Writing I	3	
ENG 271	Creative Writing II	3	
FRN 111	First Year French I	5	
FRN 122	First Year French II	5	
GDT 101	History of Graphic Design	3	
GRM 111	First Year German I	5	
GRM 122	First Year German II	5	
HUM 101	Introduction to the Humanities - Ancient to Medieval	3	
HUM 102	Introduction to the Humanities - Renaissance to Modern	3	
HUM 103	Introduction to the Humanities - 20th Century to Present	3	
HUM 120	Introduction to Film	3	
HUM 145	Comparative Religions	3	
HUM 146	Mythology	3	
HUM 150	International Cinema	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
HUM 160	American Film	3	

General Education Requirements

Course Number	Course Name	Credits	Notes
HUM 175	Arts and Cultures of Middle East	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
HUM 185	The Horror Film	3	
HUM 221	Film and Representation	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
MUS 140	Music Theory I	3	
MUS 142	Music Theory II	3	
MUS 180	Music Appreciation: Our Musical World	3	For WCC students who complete these courses prior to being admitted to EMU, the following courses should meet EMU's diverse world requirement.
PHL 101	Introduction to Philosophy	3	
PHL 123	Critical Thinking	3	
PHL 200	Existentialism	3	
PHL 205	Ethics	3	
PHL 240	Social-Political Philosophy	3	
PHL 244	Ethical and Legal Issues in Health Care	3	
PHL 245	Philosophy of Religion	3	
PHL 250	Logic	3	
PHO 103	History of Photography	3	
SPN 111	First Year Spanish I	5	
SPN 122	First Year Spanish II	5	
SPN 201	Second Year Spanish I	4	

Course Number	Course Name	Credits	Notes
SPN 202	Second Year Spanish II	4	
SPN 205	Second Year Spanish for Business	4	
SPN 224	Second Year Spanish II - Literature	3	

Approved Courses for General Education in Computer and Information Literacy

This information is from the 2017 - 2018 WCC College Catalog.

Course numbers marked in orange are available online.

Course Number	Course Name	Credits	Notes
ANI 150	3D Animation I: Modeling	4	
ANI 155	Textures and Studio Lighting for Animation	4	
ANI 160	Fundamentals of Movement and Animation	4	
ANI 235	Introduction to Compositing and Visual Effects	4	
ANI 250	3D Animation II	4	
ANI 260	3D Animation III	4	
BMG 285	Applied Data Analytics	4	
BOS 106	Electronic Planning, Sharing and Organization	3	
BOS 157	Word Processing and Document Formatting I	3	
BOS 182	Database Software Applications	3	

General Education Requirements

Course Number	Course Name	Credits	Notes
BOS 184	Spreadsheet Software Applications I	3	
BOS 208	Desktop Publishing for the Office	3	
BOS 230	Electronic Forms Design	3	
BOS 250	Office Administration	4	
BOS 257	Word Processing and Document Formatting II	3	
BOS 284	Spreadsheet Software Applications II	3	
CIS 100	Introduction to Computer Productivity Apps	3	
CIS 110	Introduction to Computer Information Systems	3	
CIS 121	Linux/UNIX I: Fundamentals	4	
CIS 161	Introduction to PowerShell	4	
CIS 206	Linux/UNIX II: Basic System Administration, Networking, and Security	4	
CIS 208	Linux/UNIX III: Intermediate System Administration, Networking, and Security	4	
CIS 221	Linux/UNIX Programming and Scripting I	4	
CIS 282	Database Principles and Application	3	
CIS 285	Applied Data Analytics	4	
CNT 100	Introduction to Windows Networking	4	

General Education Requirements

Course Number	Course Name	Credits	Notes
CNT 201	Administering Microsoft Windows Client Operating Systems	3	
CNT 206	Introduction to Networks	4	
CNT 211	Installing and Configuring Windows Server 2012	4	
CNT 216	Routing and Switching Essentials	4	
CNT 223	Administering Windows Server 2012	4	
CNT 224	Configuring Advanced Windows Server 2012 Services	4	
CNT 226	Scaling Networks	4	
CNT 236	Internetworking IV - WANs	4	
CNT 237	Health Information Networking	4	
CNT 251	Designing Windows Server Security	4	
CNT 290	Network Forensics	4	
CPS 112	Game Development for Beginners	4	
CPS 120	Introduction to Computer Science	3	
CPS 161	An Introduction to Programming with Java	4	
CPS 171	Introduction to Programming with C++	4	
CPS 192	Introduction to C#.Net	4	
CPS 251	Android Programming Using Java	4	
CPS 255	IOS/Apple Programming Fundamentals	4	
CPS 261	Advanced Java Concepts	4	

General Education Requirements

Course Number	Course Name	Credits	Notes
CPS 271	Object Features of C++	4	
CPS 272	Data Structures with C++	4	
CPS 276	Web Programming Using Apache, MySQL, and PHP	4	
CPS 278	Java Server Programming	4	
CPS 292	Intermediate and Advanced C#.Net	4	
CPS 296	Connected Device Projects with C#.Net	4	
CSS 200	Introduction to Network Security - Security+	4	
CSS 205	Essentials of Network Penetration Testing	4	
CSS 210	Network Perimeter Protection - CCNA Security	4	
CST 160	Computer Technology I	4	
CST 165	Computer Technology II	4	
CST 225	PC Networking	3	
CST 270	Computer Forensics I	4	
CST 275	Computer Forensics II	4	
CST 278	Computer Forensics for Mobile Devices	3	
GDT 100	Typography I	4	
GDT 104	Introduction to Graphic Design	4	
GDT 106	Illustrator Graphics	3	
GDT 107	InDesign	3	
GDT 108	Photoshop Graphics	3	

General Education Requirements

Course Number	Course Name	Credits	Notes
GDT 112	Principles and Problem-Solving in Graphic Design	4	
GDT 151	Screen Printing	4	
GDT 215	Typography II	4	
GDT 220	Publication Design	4	
GDT 239	Imaging and Illustration	4	
GDT 245	Digital Painting	4	
GDT 252	Advanced Digital Studio	4	
GDT 290	Professional Practices	4	
MBC 185	Medical Computer Skills and Electronic Health Records	3	
MBC 223	Medical Office Procedures	3	
MBC 224	Medical Insurance and Reimbursement	4	
NCT 121	Manual Programming and NC Tool Operation	4	
NCT 221	Advanced Manual Programming and NC Tool Operation	4	
PHO 127	Digital Photo Imaging I	4	
ROB 212	Robotics II	4	
VID 105	Foundations in Digital Video I	4	
VID 125	Foundations in Digital Video II	4	
WEB 110	Web Development I	4	
WEB 113	Web User Experience I	4	
WEB 115	Introduction to Interface Design	4	
WEB 210	Web Development II	4	

General Education Requirements

Course Number	Course Name	Credits	Notes
WEB 213	Web User Experience II	4	
WEB 215	Intermediate Interface Design	4	
WEB 230	Advanced JavaScript	4	
WEB 233	Web Analytics and SEO	4	
WEB 235	Advanced Interface Design	4	
WEB 250	PHP and MySQL	4	
WEB 255	Interaction Design	4	
WEB 263	Business Analysis and Project Management	4	

Michigan Transfer Agreement

In 2012, the Michigan legislature included boilerplate language in the community college appropriations bill that focused on improving the transferability of core college courses by revising the current Michigan Association of Collegiate Registrars & Admissions Officers (MACRAO) agreement. The language created a state committee that included 5 community college representatives, five individuals from the public universities, and four legislators (two from each chamber).

The MTA took effect for students who begin their studies in the fall 2014 semester.

Students who started prior to fall 2014 will be able to complete the existing MACRAO Agreement until the end of the summer 2019. Students may also choose to follow the MTA.

Guiding principles and recommendations for a revised "Michigan Transfer Agreement" (MTA)

- Make the agreement simple and easy to understand
- Keep the agreement student-focused
- Treat transfer students the same as native students at the receiving institution
- Acknowledge the distinction between the MTA and degree requirements
- Promote transparency among institutions to ensure accurate transfer information for students
- Require students to complete at least one credit-bearing course at the institution awarding the MTA

How the MTA Agreement Works

To fulfill the Michigan Transfer Agreement, students must successfully complete at least 30 credits with at least a 2.0 in each course: one course in English Composition; a second course in English Composition or 1 course in Communication; 1 course in Mathematics; 2 courses in Social Sciences (from two disciplines); 2 courses in Humanities and Fine Arts (from two disciplines excluding studio and performance courses); 2 courses in Natural Science including one with laboratory experience (from two disciplines).

Students must complete at least one credit-bearing course at this college for WCC to award the MTA.

Michigan Transfer Agreement

Changes effective 2016-2017

The MTA 2.0 Ad Hoc Committee was established in an effort to address topics that were unable to be discussed and/or resolved during the Agreement's initial development and implementation. Based on the Committee's work, the following updates or clarifications have been made to the MTA agreement.

1. A course geared towards a specific career, and uses it in the title (e.g., Mathematics for Teachers), is to be treated as an occupational course; thus, it cannot be applied towards the MTA.
2. Out of state credit is applicable towards the MTA when deemed appropriate by the sending institution.
3. Dual enrollment credit is applicable towards the MTA when deemed appropriate by the sending institution.
4. Advanced Placement (AP) credit is applicable towards the MTA when deemed appropriate by the sending institution; however, the receiving institution may determine transferability contingent upon its current AP acceptance policy. It is incumbent upon sending institutions to advise transferring students accordingly. NOTE: Additional areas of prior learning are not applicable to the MTA at this time (e.g., International Baccalaureate-IB, College-Level Examination Program-CLEP, DANTES Subject Standardized Test-DSST, etc.).

Michigan Transfer Agreement (MTA) (2017 - 2018 Catalog)

The course numbers of MTA-approved courses are listed here. Course numbers in *italics* below include a laboratory component. Course numbers marked in orange are available online.

One course in English Composition*

English (ENG)	111 226

Second course in English Composition or One course in Communication*

Communication (COM)	101 102 142 183 200 210 225
English (ENG)	226

One course in Mathematics

Mathematics (MTH)	125 160 176 178 180 181 191 192 197 293 295

Michigan Transfer Agreement

Two courses in Natural Sciences (from two disciplines; including one with laboratory experiences)

Astronomy (AST)	*111*
Biology (BIO)	*101* *102* *104* 107 *109* 110 *111* 142 *161* *162* *201* *208* 212 *215* *225* *227* *228* *237*
Chemistry (CEM)	*101* *102* *105* *111* *122* *140* *211* *222*
Environmental Science (ENV)	*101* 105 *201*
Geology (GLG)	*100* 103 *104* *114* *202* 276
Physics (PHY)	*100* *105* *111* *122* *211* *222*

Two courses in Social Sciences (from two disciplines)

Anthropology (ANT)	201 202 205 265
Economics (ECO)	110 211 222 280
Geography (GEO)	101
History (HST)	108 109 121 122 123 150 200 201 202 210 215 216 220 225 230 235 240 251 255 260 270
Political Science (PLS)	112 150 211 220 241 250 260 290
Psychology (PSY)	100 107 150 200 206 210 220 240 251 257 260 270 296 297 298
Sociology (SOC)	100 202 205 206 207 216 220 225 230 250

Michigan Transfer Agreement

Two courses in Humanities and Fine Arts (from two disciplines; excluding studio and performance classes)*

Arabic (ARB)	111	122												
Art (ART)	130	131	143	150										
Chinese (CHN)	111	122												
Communication (COM)	101	102	130	142	183	200	210	225						
Dance (DAN)	180													
Drama (DRA)	180													
English (ENG)	140	160	170	181	200	211	212	213	214	222	223	224	240	242
French (FRN)	111	122												
Graphic Design Technology (GDT)	101													
German (GRM)	111	122												
Humanities (HUM)	101	102	103	120	145	146	150	160	175	185	221			
Music (MUS)	140	142	180											
Philosophy (PHL)	101	123	200	205	240	244	245	250						
Photography (PHO)	103													
Spanish (SPN)	111	122	201	202	205	224								

*Note: The same course cannot be counted twice in two areas of the MTA agreement.

EMU Diverse World Requirement

If you plan to transfer to Eastern Michigan University (EMU), you can fulfill the EMU diverse world requirement at WCC by taking one of the listed classes. EMU will grant credit only if you complete the class prior to being admitted to EMU.

WCC General Education Area 2. Speech
COM 225 Intercultural Communication

WCC General Education Area 4. Natural Sciences
ENV 101 Environmental Science I
ENV 105 Introduction to Environment and Society

WCC General Education Area 5. Social and Behavioral Science
ANT 201 Introduction to Cultural Anthropology
ECO 280 International Trade and Globalization
GEO 101 World Regional Geography
HST 123 The Twentieth Century
HST 150 African American History
HST 210 U.S. Women's History
HST 230 History of the Holocaust
HST 235 African History
HST 240 The History of the Modern Middle East, 1798 - Present
HST 270 Modern China
PLS 211 Introduction to Comparative Government
PSY 107 African - American Psychology
PSY 251 Education of Exceptional Children
PSY 270 Social Psychology and Global Applications
SOC 205 Race and Ethnic Relations
SOC 206 Introduction to Gender Studies
SOC 216 Introduction to Gender and Sexuality Studies

WCC General Education Area 6. Arts and Humanities
ART 143 African American Art and Culture
ART 150 Monuments and Cultures
DAN 180 Dance Appreciation: The World of Dance
DRA 180 Theatre Appreciation
ENG 181 African-American Literature
ENG 213 World Literature I
ENG 214 Literature of the Non-Western World
ENG 224 World Literature II
ENG 242 Multicultural Literature for Youth
HUM 150 International Cinema
HUM 175 Arts and Cultures of Middle East
HUM 221 Film and Representation
MUS 180 Music Appreciation: Our Musical World

More information on the EMU diverse world requirement is available in the EMU Catalog (under Curriculum Categories in the general education program page.)

New Programs Report

Year: 2017-18

Division: Business/Computer Technologies (1)

Cybersecurity	APCSCY	Associate in Applied Science Degree

Total Number of New Programs: 1

Discontinued Programs Report

Year: 2017-18

Division: Adv Tech/Public Serv Careers (4)		
Accelerated HVACR Training	CTAHTR	Certificate
Accelerated Training in Welding	CTAWTR	Certificate
HVAC Energy Management Technician	CVHVEM	Advanced Certificate
Sustainable Technologies in HVACR	APSTH	Associate in Applied Science Degree

Division: Health Sciences (2)		
Medical Assisting	CTMA	Certificate
Medical Office Assistant (Clinical)	CTMOS	Certificate

Total Number of Discontinued Programs: 6

All Program Changes

Year: 2017-18

Division: Adv Tech/Public Serv Careers

Title	Code	Changes
Child Care Professional	APCCP	| Rmv Crse
Child Development	CTCDA	| Rmv Crse | Tot Cred
Criminal Justice - Law Enforcement	APCJLE	| Add Crse | Rmv Crse | Tot Cred | Cont Elig
Fluid Power	CTFPOW	| Rmv Crse | Tot Cred
Police Academy	CTPA	| Add Crse | Rmv Crse | Tot Cred

All Program Changes

Year: 2017-18
Division: Business/Computer Technologies

Title	Code	Changes
3D Animation	APANIM	| Adm Req
Business Office Administration	APBOAD	| Add Crse | Rmv Crse | Tot Cred
Culinary and Hospitality Management	APCULD	
Photographic Technology	APPHOT	| Rmv Crse

All Program Changes

Year: 2017-18
Division: Health Sciences

Title	Code	Changes
Computed Tomography (CT)	CPCTOM	| Adm Req
Magnetic Resonance Imaging (MRI)	CPMRIP	| Rmv Crse | Tot Cred | Adm Req
Medical Billing and Coding	CTMBC	| Rmv Crse | Tot Cred | Adm Req
Nursing Assistant Skills Training	CCNAST	| Desc | Adm Req
Nursing Transfer (EMU School of Nursing)	APNURE	| Adm Req
Nursing, Registered	APNURS	| Add Crse | Rmv Crse | Tot Cred | Adm Req | Cont Elig
Pharmacy Technology	CTPHAR	| Add Crse
Radiography	APRAD	| Add Crse | Rmv Crse | Adm Req
Surgical Technology	APST	| Add Crse | Rmv Crse | Tot Cred | Adm Req

All Program Changes

Year: 2017-18

Division: Humanities, Social & Behav Sci

Title	Code	Changes
English as a Second Language Certificate	CTESL1	| Add Crse | Rmv Crse | Adm Req
Human Services	AAHUST	| Add Crse | Tot Cred | Articulatn | Cont Elig
Journalism	AAJOUR	| Add Crse
Technical Communication	CTTC	| Rmv Crse
Technical Communication	AATCD	| Rmv Crse

Number of Programs by Award Type

Associate Degrees		**45**
Associate Degree/3+1 Transfer	45	
Certificates		**79**
Advanced Certificate	22	
Certificate	51	
Certificate of Completion	2	
Post-Associate Certificate	4	
Associate Degrees		**56**
Associate in Applied Science Degree	30	
Associate in Arts Degree	16	
Associate in Science Degree	10	
Total		**180**

Program Information Report

School of Advanced Manufacturing Systems

Whether your interest is in manufacturing or automation, the programs in the School of Advanced Manufacturing Systems will fit your needs. Maintain and troubleshoot the machines that make commercial goods by specializing in one or more aspects of the machining industry. Develop entry level or advanced skills in electronics, automation hydraulics or numerical controls.

Washtenaw Community College offers programs at several levels for students who want to begin new careers or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

After completing a certificate, students can progress to the next level, the advanced certificate. The credit hours required for these programs also vary. This type of certificate provides a more specialized level of skill development, and often allows students to upgrade their positions at their places of employment.

The next level, an Associate in Applied Science, is available for some programs. For some career fields, it is possible to earn a certificate, advanced certificate, and an Associate in Applied Science degree in the same field. In these cases, the credit hours from the certificate and advanced certificate can be applied to the credit hours needed for the Associate in Applied Science degree.

Alternatively, students can earn an AAS in Occupational Studies by completing a certificate, an advanced certificate (if one exists) and General Education requirements.

Automation

Are you looking for a career as a hydraulic technician or an introduction to manufacturing engineering? Consider the field of automation.

Program Information Report

Introduction to Manufacturing Processes (CCMETI)

Certificate of Completion

Program Effective Term: Fall 2017

In this program, students (including dual-enrolled high school students) interested in exploring the manufacturing industry will learn fundamentals in manufacturing including blueprint reading, 3D modeling systems and output files used to control manufacturing systems. Part manufacturing processes including measurement, safety, machining at mills, lathes and saws will be introduced. In these entry-level courses, students will learn setup and operation procedures at CNC computerized mills and lathes, control of process at CNC mills and lathes to produced quality parts as well as fundamentals for writing programs.

Major/Area Requirements		(8 credits)
MEC 101	3D Modeling and Blueprint Reading	2
MTT 102	Machining for the Technologies	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II	2

Minimum Credits Required for the Program: 8

Program Information Report

Fluid Power (CTFPOW)

Certificate

Program Effective Term: Fall 2017

High Skill Occupation High Wage Occupation

This program prepares students for entry level positions as a hydraulic technician. The program gives students an understanding of hydraulic and pneumatic system design including motion control, using electro-hydraulic proportional and servo valves. Students who complete the program may choose to take the Hydraulic Specialist or Technician Certification Examination through the Fluid Power Society.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Major/Area Requirements		**(12 credits)**
FLP 110	Fluid Power Fundamentals - II	2
FLP 214	Hydraulic Circuits and Controls	4
FLP 225	Fluid Power Motion Control	3
FLP 226	Pneumatics	3

Core Courses		**(11 credits)**
MEC 100	Materials and Processes	3
FLP 101	Fluid Power Fundamentals - I	2
MTT 102	Machining for the Technologies	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
ROB 101	Robotics I - I	2

Core courses must be taken before Major/Area Requirements.

Minimum Credits Required for the Program: 23

Notes:

This certificate can also lead to an associate degree in Mechatronics.

Program Information Report

Advanced Machine Tool Programming (CVMTPA)

Advanced Certificate

Program Effective Term: Fall 2017

In this program, students will learn advanced CNC programming skills. Students will practice the fundamentals of Intuitive Probing Systems (IPS) and Visual Quick Code (VQC) needed to create machine tool programs. Starting with 2D and 3D CAM programming and advancing to 4th and 5th axis machining, students will learn the proper methods for creating tool paths.

Program Admission Requirements:
Completion of the Machine Tool Programming (CNC) certificate.

Major/Area Requirements		(16 credits)
MEC 120	3D-Printing: Machine, Process and Innovation	4
NCT 255	Probes, Macros and Conversational Programming for CNC	4
NCT 259	MasterCam 2D and 3D CAM CNC Programming for Mills	4
NCT 269	4 and 5 Axis Machining for the CNC Vertical Mills	4

Minimum Credits Required for the Program: 16

Program Information Report

Mechatronics (APMETR)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Skill Occupation

This program prepares students for entry-level positions as an automated equipment technician who assembles, installs, programs, troubleshoots and maintains robotic and automated equipment. Students have a choice to follow any of three different specialty tracks which will prepare them for the various applications of automation. Each track features a variety of application level classes where the student performs lab-oriented practice for required skills. It is highly recommended that beginning students take at least one technical class during their first semester. See an advisor in the Industrial Technology department for assistance.

Students must select one of the concentrations to complete as a program requirement.

Program Concentrations
Fluid Power Specialty (FPWR)
FLP 110 Fluid Power Fundamentals - II
FLP 214 Hydraulic Circuits and Controls
FLP 225 Fluid Power Motion Control
FLP 226 Pneumatics

Industrial Electronics Specialty (IELC)
ELE 211 Basic Electronics
ELE 254 PLC Applications
FLP 226 Pneumatics

Numerical Control Specialty (NCTL)
NCT 110 Introduction to Computerized Machining (CNC) - II
NCT 120 2D CAD CAM for Shape Cutting
NCT 121 Manual Programming and NC Tool Operation
NCT 123 2D CAD CAM CNC Programming for Mills and Lathes
NCT 221 Advanced Manual Programming and NC Tool Operation

Articulation:
Eastern Michigan University, several BS degrees;
Wayne State University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Minimum Concentration Credits Required for the Program: 70
Select a concentration for requirements and total credits required for the program.

Mechatronics Concentrations

Fluid Power Specialty (FPWR)		(70 credits)
First Semester		**(15 credits)**
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
	Math Elective(s)	3
Second Semester		**(14 credits)**
ELE 111	Electrical Fundamentals	4
MEC 100	Materials and Processes	3
MEC 101	3D Modeling and Blueprint Reading	2
MTT 102	Machining for the Technologies	2
	Writing Elective(s)	3
Third Semester		**(13 credits)**
FLP 214	Hydraulic Circuits and Controls	4

MEC 201	Mechanisms	2
ROB 212	Robotics II	4
	Speech Elective(s)	3

Fourth Semester		(14 credits)
ELE 224	Introduction to PLCs	4
FLP 225	Fluid Power Motion Control	3
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
	Soc. Sci. Elective(s)	3

Fifth Semester		(14 credits)
FLP 226	Pneumatics	3
MEC 224	Robotics IV	4
	Arts/Human. Elective(s)	3
	Nat. Sci. Elective(s)	4

Minimum Credits Required for the Concentration or Option: 70

Industrial Electronics Specialty (IELC) (71 credits)

First Semester		(15 credits)
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
	Math Elective(s)	3

Second Semester		(15 credits)
ELE 111	Electrical Fundamentals	4
ELE 211	Basic Electronics	4
MEC 100	Materials and Processes	3
MEC 101	3D Modeling and Blueprint Reading	2
MTT 102	Machining for the Technologies	2

Third Semester		(16 credits)
ELE 224	Introduction to PLCs	4
MEC 201	Mechanisms	2
ROB 212	Robotics II	4
	Speech Elective(s)	3
	Writing Elective(s)	3

Fourth Semester		(14 credits)
ELE 254	PLC Applications	4
FLP 226	Pneumatics	3
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
	Soc. Sci. Elective(s)	3

Fifth Semester		(11 credits)
MEC 224	Robotics IV	4
	Arts/Human. Elective(s)	3
	Nat. Sci. Elective(s)	4

Minimum Credits Required for the Concentration or Option: 71

Numerical Control Specialty (NCTL) (72 credits)

First Semester		(15 credits)
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2

Program Information Report

ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective	Math Elective(s) Academic Math Level 4 or Higher	3-4
Second Semester		**(13 credits)**
ELE 111	Electrical Fundamentals	4
MEC 100	Materials and Processes	3
MEC 101	3D Modeling and Blueprint Reading	2
MTT 102	Machining for the Technologies	2
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
Third Semester		**(16 credits)**
MEC 201	Mechanisms	2
NCT 121	Manual Programming and NC Tool Operation	4
ROB 212	Robotics II	4
	Speech Elective(s)	3
	Writing Elective(s)	3
Fourth Semester		**(15 credits)**
ELE 224	Introduction to PLCs	4
NCT 221	Advanced Manual Programming and NC Tool Operation	4
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
	Soc. Sci. Elective(s)	3
Fifth Semester		**(13 credits)**
NCT 123	2D CAD CAM CNC Programming for Mills and Lathes	2
MEC 224	Robotics IV	4
	Arts/Human. Elective(s)	3
	Nat. Sci. Elective(s)	4

Minimum Credits Required for the Concentration or Option: 72

Minimum Credits Required for the Program: 70

Notes:

**Students who have successfully completed FLP 110 as part of their certificate do not need to take this course as a semester requirement. Course can only be taken once for credit.*

***Students who have successfully completed NCT 110 as part of their certificate do not need to take this course as a semester requirement. Course can only be taken once for credit.*

See an advisor to assist in scheduling and planning for each semester as some classes have limited offering.

Electronics

Specialize in industrial electricity/electronics or computerized systems and programmable logic controllers. The field of Electronics is open to you.

Program Information Report

Industrial Electronics Technology (CFIET)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This program prepares students for entry-level jobs in any of the industrial electricity/electronics cluster of occupations. Students will develop skills in the installation, maintenance, and troubleshooting of industrial control systems with a focus on programmable logic controllers, electronic sensors, and electronic control circuits.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Students must have an Academic Math Level of 3 to enroll in ELE 111. One year of high school algebra with a grade of "C" or better is recommended.

Major/Area Requirements		(16 credits)
ELE 111	Electrical Fundamentals	4
ELE 211	Basic Electronics	4
ELE 224	Introduction to PLCs	4
ELE 254	PLC Applications	4

Minimum Credits Required for the Program: **16**

Program Information Report

Industrial Electronics Technology II (CVIET2)

Advanced Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This program provides advanced instruction for students who wish to enhance their skills in the area of industrial electronic control. The courses in this certificate build on the foundation of electricity and electronic control introduced in the Industrial Electronics Technology certificate. Students will learn to apply and control electric motors, use structured techniques to program PLCs, and relate their understanding of electricity and controls to the requirements of the National Electrical Code. This program prepares students to take the State of Michigan Journeyman Electrician Licensing Exam.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Completion of the Industrial Electronics Technology certificate or equivalent.

Major/Area Requirements		**(12 credits)**
ELE 134	Motors and Controls	4
ELE 204	National Electrical Code	4
ELE 284	Control Logic Programming	4

Minimum Credits Required for the Program: **12**

Machine Tool

Learn about machining operations through the production of parts using WCC's extensive machine tool laboratory.

Program Information Report

Machine Tool Programming (CNC) (CTMTP)

Certificate

Program Effective Term: Fall 2017

In this program, students will learn to write, read, and edit programs for CNC machine tools. They will understand core canned cycles for milling and turning operations on CNC machine tools and have the skills to do 2D and 3D modeling and posting of CNC code using CAD/CAM software. Students completing this certificate will be able to create, edit, and debug code for local manufacturing companies.

Program Admission Requirements:
Completion of Machine Tool Setup and Operations certificate or comparable course or work experience. Academic Math Level 4 is required for NCT 121 and NCT 221.

Major/Area Requirements		(12 credits)
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
NCT 121	Manual Programming and NC Tool Operation	4
NCT 123	2D CAD CAM CNC Programming for Mills and Lathes	2
NCT 221	Advanced Manual Programming and NC Tool Operation	4

Minimum Credits Required for the Program: 12

Program Information Report

Machine Tool Setup and Operation (CTMTSO)

Certificate

Program Effective Term: Fall 2017

In this program, students learn to setup and operate CNC machine tools, traditional mills, lathes, and saws. They learn how to use basic measurement tools and read blueprints. This certificate will highlight the fundamentals of materials and processes including mechanical and physical testing and heat treatment of ferrous and non-ferrous metals. Students completing this certificate will be able to perform many of the fundamental tasks within a fabrication shop, including simple part manufacturing, set-up and operation of CNC machine tools as well as inspection using simple measurement tools.

Major/Area Requirements		(17 credits)
MEC 100	Materials and Processes	3
MEC 101	3D Modeling and Blueprint Reading	2
MEC 201	Mechanisms	2
MTT 102	Machining for the Technologies	2
MTT 111	Machine Shop Theory and Practice	4
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II	2

Minimum Credits Required for the Program: 17

Other Options for Advanced Manufacturing Systems

Program Information Report

Computer Systems Technology (CTCSTC)

Certificate

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

This program prepares students for employment as a microcomputer service technician. While preparing students to pass the Computer Technology Industry Association's (CompTIA) A+ Certification Examination, the program goes well beyond the requirements of the exam. The student will develop hands-on troubleshooting skills in solving hardware problems, working with operating systems, and relating to customers. This program also provides the foundation for Washtenaw Community College's two advanced certificates in computer networking.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Major/Area Requirements		(16 credits)
CST 118	Microsoft Command Line Fundamentals	2
CST 150 or	Computer Systems Technology I	
CST 160	Computer Technology I	4-5
CST 155 or	Computer Systems Technology II	
CST 165	Computer Technology II	4-5
CST 225	PC Networking	3
BMG 205 or	Creating the Customer Experience	
CST 174 or	CST Co-op I	
CST 270	Computer Forensics I	3-4
Minimum Credits Required for the Program:		**16**

Program Information Report

Welding and Fabrication Principles (CTWLDS)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Wage Occupation**

This certificate introduces students to safe welding and cutting practices and principles including, proper technique and position, weld quality requirements, destructive and non-destructive testing and examination methods, print reading and interpretation of welding symbols as well as basic metal fabrication. Students will use the foundation and working knowledge to weld in all processes, perform repair techniques using thermal cutting and gouging, apply the requirements to executive quality welds and apply CNC programming language that can be used to produce parts that can be assembled and welded. This certificate serves as a fundamental pathway into the Welding and Fabrication Advanced Applications certificate and Welding Technology degree. Students who successfully complete this certificate will have learned the skills sought by the workforce as an entry-level welder and fabricator.

Articulation:
Eastern Michigan University, several BS degress.

Copies can be obtained from the Counseling Office, a program advisor or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Requirements		**(24 credits)**
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
WAF 106	Welding Print Reading	3
WAF 109	Welding Safety and OSHA Regulations	2
WAF 125	Introduction to Welding Processes I	2
WAF 126	Introduction to Welding Processes II	2
WAF 130	Shielded Metal Arc Welding (SMAW)	4
WAF 131	Thermal Cutting, Gouging and Weld Repair	3
WAF 139	Basic Metal Fabrication	3
WAF 140	Inspection and Testing	3
Minimum Credits Required for the Program:		**24**

Program Information Report

Welding and Fabrication Advanced Applications (CVWLDN)

Advanced Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Wage Occupation**

This advanced certificate combines welding fundamentals with more complex welding, cutting and fabrication techniques and applications aimed to further develop one's skills and core competencies. Students focus on welding using processes and positions common in industry, perform destructive and non-destructive testing, identify weld failures and perform root cause analysis, executive repair techniques, perform advanced fabrication techniques and execute automated welding and cutting programming and operations. Students who successfully complete this advanced certificate will have learned a broad range of essential skillsets critical to the trade and how to apply those skills to manufacturing, automotive, construction, aerospace, oil, military industry, gas and power industries.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Successful completion of the Welding and Fabrication Principles Certificate (CTWLDS).

Continuing Eligibility Requirements:
WAF 233 and WAF 239 require a Math Level 2.

Major/Area Requirements		(24 credits)
WAF 150	Automated Welding and Cutting	3
WAF 210	Welding Metallurgy	3
WAF 230	Advanced Shielded Metal Arc Welding (SMAW)	4
WAF 231	Gas Tungsten Arc Welding (GTAW)	4
WAF 232	Semi-Automatic Welding Processes	4
WAF 233	Submerged Arc and Flux Core Arc Welding	3
WAF 239	Advanced Metal Fabrication	3

Minimum Credits Required for the Program: **24**

Program Information Report

Welding Technology (APWLDF)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Wage Occupation

The Welding Technology program offers specialized welding and fabrication instruction through theoretical, practical and technical learning objectives and strategies. The core curriculum specializes in welding and fabrication and delves into the expanses of welding technology as a whole. Students are first introduced to welding, cutting and fabrication safety; theory and fundamentals; and then transition to more advanced welding and fabrication processes and application, such as weld quality, inspection testing and repair techniques and automated welding and cutting systems and operations. Students who successfully complete this program will have learned a diverse skillset giving them opportunities to enter the workforce as entry-level welders, fabricators, field technicians and positions them for higher learning in welding engineering, welding education or materials science.

Articulation:
Eastern Michigan University, several BS degrees;
Pennsylvania College of Technology, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

First Semester		**(14 credits)**
Elective	Math Elective(s)	3-4
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
WAF 106	Welding Print Reading	3
WAF 109	Welding Safety and OSHA Regulations	2
WAF 125	Introduction to Welding Processes I	2
WAF 126	Introduction to Welding Processes II	2

Second Semester		**(16 credits)**
Elective	Computer Elective(s)	3
WAF 130	Shielded Metal Arc Welding (SMAW)	4
WAF 131	Thermal Cutting, Gouging and Weld Repair	3
WAF 139	Basic Metal Fabrication	3
WAF 140	Inspection and Testing	3

Third Semester		**(15 credits)**
Elective	Writing Elective(s)	3-4
WAF 230	Advanced Shielded Metal Arc Welding (SMAW)	4
WAF 231	Gas Tungsten Arc Welding (GTAW)	4
WAF 232	Semi-Automatic Welding Processes	4

Fourth Semester		**(12 credits)**
Elective	Speech Elective(s)	3
WAF 150	Automated Welding and Cutting	3
WAF 210	Welding Metallurgy	3
WAF 233	Submerged Arc and Flux Core Arc Welding	3

Fifth Semester		**(12 credits)**
Elective	Arts/Human. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3-4
Elective	Soc. Sci. Elective(s)	3
WAF 239	Advanced Metal Fabrication	3

Minimum Credits Required for the Program: 69

Program Information Report

School of Apprenticeship and Occupational Studies

Find a trade-related associate's degree program that builds on your professional abilities while giving you the knowledge and skills needed to move into organizational leadership.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

The next level, an Associate in Applied Science, is available for some programs.

Alternatively, students can earn an AAS in Occupational Studies by completing a certificate and General Education requirements.

Apprenticeship and Occupational Studies

These individualized programs utilize earned certificates, apprenticeships and trade-related credits tailored to the needs of the student. The Occupational Studies degree offers the flexibility to combine certain certificate programs with general education courses and electives to develop an individualized Associate in Applied Science degree.

Apprentice Completion (CTAC)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

Program is also available online

This program gives skilled tradespersons who are sponsored by qualified organizations the opportunity to apply trade-related credits from their apprenticeship programs toward a WCC Certificate. Students must be sponsored by a qualified organization to enroll in this program.

Requirements	**(24 credits)**
Complete sponsored apprenticeship program in technical or trade-related coursework.	24-36

Minimum Credits Required for the Program: **24**

Notes:

**See a program advisor to determine the courses for this certificate.*

Program Information Report

Journeyman Industrial (APJPIM)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

Program is also available online

Some employers require or prefer employees to have an associate degree as a condition for employment or for advancement. Students can earn an Associate in Applied Science Degree in Journeyman Industrial by completing the requirements listed.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Major/Area Requirements		**(39 credits)**
	Complete the Apprenticeship Completion Certificate (CTAC), or journeyman-approved coursework in a technical or trade-related area	24-36
Elective	Take additional credits as needed if total program credits are below 60.	15

General Education Requirements		**(21 credits)**
Writing	Elective(s)	3-4
Math	Elective(s)*	3-4
Speech	Elective(s)**	3
Nat. Sci.	Elective(s)***	3-4
Soc. Sci.	Elective(s)	3
Arts/Human.	Elective(s)	3
Computer Lit.	Elective(s)	3

Minimum Credits Required for the Program: 60

Notes:

**UA students may use APP 113 Math for Pipe Trades (3 credits).*
***UA students may use UAT 210 Public Speaking (1.5 credits) and UAT 213 Planning and Presenting Lessons (1.5 credits).*
****UA students may use SCI 102 Applied Science (3 credits).*

Program Information Report

Occupational Studies (APOST)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

This program allows students to earn an Associate in Applied Science degree by building on occupational/technical courses and certificates. This option can be selected if an associate degree is required or preferred as a condition for employment or advancement in a field. The program also allows students to combine coursework from several occupational areas to prepare for a job that requires multidisciplinary skills. Meet with a divisional counselor or faculty advisor for assistance in developing a program of study. A counselor can help determine career interests and educational goals, as well as provide transfer and career information.

Articulation:
Eastern Michigan University, several BS degrees;
Ferris State University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

General Studies Program Requirements	(60 credits)
Complete the General Education Requirements for the Associate in Applied Science Degree: Writing (3-4) Speech (3) Math (3-4) Nat. Sci. (3-4) Soc. Sci. (3) Arts/Human. (3) Computer Lit. (3)	21-24
Complete a minimum of 20 credits in an occupational/technical area	20
Complete additional coursework as free electives to bring the total to a minimum of 60 credits	19
Minimum Credits Required for the Program:	**60**

Articulated Union Building Trade Apprenticeship Programs

These programs are restricted to members of approved union building trade apprenticeship programs, including United Association (UA).

Program Information Report

Construction Supervision (CTCNS)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

Program is also available online

This Construction Supervision Certificate program enables apprentice and journey-level members of the articulated union building trade apprenticeship programs to enter the job market with knowledge and skills in planning, organizing and supervising construction projects. This certificate provides an option for those who want to attain a higher position in the construction field and for those desiring to start their own companies.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
The program is only open to active members of articulated union building trade apprenticeship programs.

Major/Area Requirements		**(15 credits)**
UAS 111	Construction Supervision I: Motivating Employees	3
UAS 122	Construction Supervision II: Supervisory Skills	3
UAS 210	Construction Supervision III: Legal and Personnel Aspects	3
UAS 222	Construction Supervision IV: The Construction Project	3
UAS 230	Construction Supervision V: Scheduling and Project Management	3

Minimum Credits Required for the Program: **15**

Program Information Report

Construction Supervision (APCNSP)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

This program gives apprentice and journey-level members of the articulated union building trade apprenticeship programs the opportunity to apply their apprenticeship training and trade-related experience toward an associate's degree in Construction Supervision. In addition to the courses in Construction Supervision, students will complete general education courses and receive nontraditional credit for their work experience and apprenticeship.

Students must complete an apprenticeship program concentration in plumbing, pipefitting, HVAC, sprinkler fitting, ironworking, bricklaying, tile setting or other approved union building trade. Upon completion of this, students should apply for non-traditional credit evaluation of their apprenticeship experiences to meet the apprentice program concentration requirement (19-26 credits).

Architectural and Ornamental Ironworker (AOIW)
IWA 120
IWA 122
IWA 131
IWA 161
IWA 201
IWA 224
IWA 265

Brick and Block Laying Apprenticeship (BBLA)
BAC 100
BAC 101
BAC 102
BAC 110
BAC 111
BAC 112
BAC 210
BAC 211
BAC 212
BAC 213

HVAC Specialty (HVTC)
UAE 140
UAE 142
UAE 144
UAE 146
UAE 148
UAE 150
UAE 152
UAE 154
UAE 156
UAE 158

Journeyman Ironworker (JMIW)
IWA 120
IWA 122
IWA 131
IWA 141
IWA 155
IWA 161
IWA 172
IWA 201
IWA 224
IWA 272

Metal Building Erector (MTBE)
IWA 120
IWA 122
IWA 131
IWA 161

IWA 172
IWA 201
IWA 224
IWA 235

Pipefitter Specialty (PIPE)
UAF 102
UAF 120
UAF 122
UAF 124
UAF 126
UAF 128
UAF 130
UAF 132
UAF 134
UAF 136

Plumber Specialty (PLUM)
UAP 100
UAP 102
UAP 104
UAP 106
UAP 108
UAP 110
UAP 112
UAP 114
UAP 116
UAP 118

Reinforcing Ironworker (REIW)
IWA 120
IWA 122
IWA 141
IWA 201
IWA 224
IWA 241

Rigger/Machinery Mover (RGMM)
IWA 120
IWA 122
IWA 151
IWA 155
IWA 191
IWA 201
IWA 224

Sprinkler Fitter Specialty (SPRF)
UAR 160
UAR 162
UAR 164
UAR 166
UAR 168
UAR 170
UAR 172
UAR 174
UAR 176
UAR 178

Tile Mechanics (TILM)
BAC 100
BAC 101
BAC 102
BAC 120
BAC 121
BAC 122
BAC 220

Program Information Report

BAC 221
BAC 222
BAC 223

Articulation:
Davenport University, Bachelor degree;
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
The program is only open to active members of articulated union building trade apprenticeship programs.

First Semester		**(14 credits)**
UAS 111	Construction Supervision I: Motivating Employees	3
	Computer Lit. Elective(s)	3
	Math Elective(s)*	3
	Union Approved Apprenticeship	5

Second Semester		**(15 credits)**
UAS 122	Construction Supervision II: Supervisory Skills	3
UAS 210	Construction Supervision III: Legal and Personnel Aspects	3
	Speech Elective(s)**	3
	Arts/Human. Elective(s)	3
	Union Approved Apprenticeship	3

Third Semester		**(15 credits)**
UAS 222	Construction Supervision IV: The Construction Project	3
	Nat. Sci. Elective(s)***	3
	Soc. Sci. Elective(s)	3
	Union Approved Apprenticeship	6

Fourth Semester		**(16 credits)**
UAS 230	Construction Supervision V: Scheduling and Project Management	3
	Writing Elective(s)	4
	Union Approved Apprenticeship	9

Minimum Credits Required for the Program: 60

Notes:

** UA students may use APP 113 Math for Pipe Trades (3 credits)*
***UA students may use UAT 210 Public Speaking (1.5 credits) and UAT 213 Planning and Presenting Lessons (1.5 credits)*
**** UA students may use SCI 102 Applied Science (3 credits)*

Program Information Report

Industrial Training (APITRN)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

This program gives indentured journeymen of the United Association or Ironworkers, the opportunity to apply their work as certified apprentice instructors toward an associate in applied science degree in Industrial Training. Students will complete the general education courses, five summer instructor training sessions, and receive non-traditional credits for experience in an area of specialization such as plumbing, pipefitting, HVAC, sprinkler fitting and ironworking.

Articulation:
Davenport University, Bachelor degree;
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Open only to United Association and Ironworker instructors.

Major/Area Requirements		(19 credits)
	UA students must complete 12-15 additional credits from a combination of required teaching methods courses and technical update courses (UAT courses).	12-15
	Ironworker students must complete 15 credits from a combination of required teaching methods courses and technical update courses (IWT courses).	
	Complete electives (0-7 credits) to meet a minimum of 60 credits.	7

General Education Requirements		(22 credits)
Writing	Elective(s)	4
UAT 210	Public Speaking*	1.5
UAT 213	Planning and Presenting Lessons*	1.5
Math	Elective(s)**	3
Nat. Sci.	Elective(s)**	3
Soc. Sci.	Elective(s)	3
Arts/Human.	Elective(s)	3
Computer Lit.	Elective(s)	3

**Students may choose any WCC courses that meet the speech requirement. Only applies to UA programs.*
***APP 113 Math for Pipe Trades and SCI 102 Applied Science are included in UA specializations.*

Minimum Option Credits Required for the Program: 19
Complete a specialization in plumbing, pipefitting, HVAC, sprinkler fitting or ironworking. Students should apply for non-traditional credit evaluation of their apprenticeship experiences to meet this requirement.

Industrial Training Options

Architectural and Ornamental Ironworker (AOIW)		(19 credits)
IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 131	Introduction to Metal Building	2
IWA 161	Introduction to Architectural and Ornamental Ironwork	2
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1
IWA 265	Advanced Architectural and Ornamental Ironwork	6

HVAC Specialty (HVTC)		(26 credits)
UAE 140	Introduction to HVACR Service Technician Practices	3
UAE 142	Soldering and Brazing	3
UAE 144	Refrigeration	2
UAE 146	Air Conditioning	2
UAE 148	Electrical Controls	2
UAE 150	DC Electronics	2
UAE 152	Advanced Electrical Controls and Pneumatic Controls	3

UAE 154	Advanced Air Conditioning and Refrigeration	3
UAE 156	Air and Water Balancing and Motor Alignment	3
UAE 158	Advanced HVACR Practices	3

Journeyman Ironworker (JMIW)		(26 credits)
IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 131	Introduction to Metal Building	2
IWA 141	Introduction to Reinforcing Ironwork	3
IWA 155	Rigging/Machinery Mover II	3
IWA 161	Introduction to Architectural and Ornamental Ironwork	2
IWA 172	Introduction to Structural Features	4
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1
IWA 272	Advanced Structural Features	3

Metal Building Erector (MTBE)		(19 credits)
IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 131	Introduction to Metal Building	2
IWA 161	Introduction to Architectural and Ornamental Ironwork	2
IWA 172	Introduction to Structural Features	4
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1
IWA 235	Advanced Metal Building	2

Pipefitter Specialty (PIPE)		(26 credits)
UAF 102	Introduction to Arc Welding, Soldering, and Brazing	3
UAF 120	Introduction to Pipefitter Practices	3
UAF 122	Drawing Interpretation and Plan Reading	2
UAF 124	Oxy Fuel Cutting and Shielded Arc Welding	2
UAF 126	Hydronic Heating and Steam Systems	2
UAF 128	Refrigeration and Electrical Controls	2
UAF 130	Advanced SMAW Welding	3
UAF 132	Advanced Pipefitter Topics	3
UAF 134	Controls and Instrumentation	3
UAF 136	GTAW Welding	3

Plumber Specialty (PLUM)		(26 credits)
UAP 100	Introduction to Plumbing Practices	3
UAP 102	Introduction to Arc Welding, Soldering and Brazing	3
UAP 104	Drawing Interpretation and Plan Reading	2
UAP 106	Oxy Fuel Cutting and Shielded Arc Welding	2
UAP 108	Water Supply and Drainage	2
UAP 110	Customer Service Techniques	2
UAP 112	Plumbing Fixtures and Appliances	3
UAP 114	Plumbing Codes and Regulations	3
UAP 116	Medical Gas and Backflow Prevention Techniques	3
UAP 118	Advanced Plumbing Practices	3

Reinforcing Ironworker (REIW)		(19 credits)
IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 141	Introduction to Reinforcing Ironwork	3
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1
IWA 241	Advanced Reinforcing Ironwork	7

Rigger/Machinery Mover (RGMM)		(19 credits)
IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 151	Rigging/Machinery Mover I	3
IWA 155	Rigging/Machinery Mover II	3
IWA 191	Reinforced Iron and Structures for Rigging	4
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1

Program Information Report

Sprinkler Fitter Specialty (SPRF)		(26 credits)
UAR 160	Introduction to Sprinkler Fitter Practices	3
UAR 162	Basic Drawing and Introduction to Automatic Sprinklers	3
UAR 164	Reading Automatic Sprinkler Piping Drawings	2
UAR 166	Installation of Sprinkler Systems	2
UAR 168	Architectural Working Drawings and Blueprint Reading for Sprinkler Fitters	2
UAR 170	Sprinkler Water Supply and The Automatic Sprinkler	2
UAR 172	Types of Fire Protection Systems and Alarms	3
UAR 174	Special Application Sprinkler Systems and Hydraulics	3
UAR 176	Human Relations	3
UAR 178	Technical Writing	3

Trade Related Elective Credits (TRI)		(19 credits)
	TRI Trade Related Elective Credits	19-26

Minimum Credits Required for the Program: 60

Construction Supervision (ASCNSV)

Associate in Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

This program gives apprentice and journey-level members of the articulated union building trade apprenticeship programs the opportunity to apply their apprenticeship training and trade-related experience toward an associate's degree in Construction Supervision. In addition to the courses in Construction Supervision, students will complete general education courses and receive nontraditional credit for their work experience and apprenticeship.

Students must complete an apprenticeship program concentration in plumbing, pipefitting, HVAC, sprinkler fitting, ironworking, bricklaying, tile setting or other approved union building trade. Upon completion of this, students should apply for non-traditional credit evaluation of their apprenticeship experiences to meet the apprentice program concentration requirement (19-26 credits).

Architectural and Ornamental Ironworker (AOIW)
IWA 120
IWA 122
IWA 131
IWA 161
IWA 201
IWA 224
IWA 265

Brick and Block Laying Apprenticeship (BBLA)
BAC 100
BAC 101
BAC 102
BAC 110
BAC 111
BAC 112
BAC 210
BAC 211
BAC 212
BAC 213

HVAC Specialty (HVTC)
UAE 140
UAE 142
UAE 144
UAE 146
UAE 148
UAE 150
UAE 152
UAE 154
UAE 156
UAE 158

Journeyman Ironworker (JMIW)
IWA 120
IWA 122
IWA 131
IWA 141
IWA 155
IWA 161
IWA 172
IWA 201
IWA 224
IWA 272

Metal Building Erector (MTBE)
IWA 120
IWA 122
IWA 131
IWA 161

IWA 172
IWA 201
IWA 224
IWA 235

Pipefitter Specialty (PIPE)
UAF 102
UAF 120
UAF 122
UAF 124
UAF 126
UAF 128
UAF 130
UAF 132
UAF 134
UAF 136

Plumber Specialty (PLUM)
UAP 100
UAP 102
UAP 104
UAP 106
UAP 108
UAP 110
UAP 112
UAP 114
UAP 116
UAP 118

Reinforcing Ironworker (REIW)
IWA 120
IWA 122
IWA 141
IWA 201
IWA 224
IWA 241

Rigger/Machinery Mover (RGMM)
IWA 120
IWA 122
IWA 151
IWA 155
IWA 191
IWA 201
IWA 224

Sprinkler Fitter Specialty (SPRF)
UAR 160
UAR 162
UAR 164
UAR 166
UAR 168
UAR 170
UAR 172
UAR 174
UAR 176
UAR 178

Tile Mechanics (TILM)
BAC 100
BAC 101
BAC 102
BAC 120
BAC 121
BAC 122
BAC 220

Program Information Report

BAC 221
BAC 222
BAC 223

Articulation:
Davenport University, Bachelor degree;
Eastern Michigan University, several BS degrees;
International Masonry Institute, Certified Masonry Construction program.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
The program is only open to active members of articulated union building trade apprenticeship programs.

First Semester		**(17 credits)**
UAS 111	Construction Supervision I: Motivating Employees	3
	MTH 160 or MTH 169 or higher level MTH course	4
	Computer Lit. Elective(s)	3
	Writing 1 Elective(s)	4
	Union Approved Apprenticeship	3

Second Semester		**(16 credits)**
UAS 122	Construction Supervision II: Supervisory Skills	3
UAS 210	Construction Supervision III: Legal and Personnel Aspects	3
	Arts/Human. 1 Elective(s)	3
	Soc. Sci. 1 Elective(s)	3
	Union Approved Apprenticeship	4

Third Semester		**(17 credits)**
UAS 222	Construction Supervision IV: The Construction Project	3
	Arts/Human. 2 Elective(s)	3
	Nat. Sci. Must contain a lab	4
	Writing 2 Elective(s)	3
	Union Approved Apprenticeship	4

Fourth Semester		**(17 credits)**
UAS 230	Construction Supervision V: Scheduling and Project Management	3
	Soc. Sci 2 Elective(s)	3
	Speech Elective(s)*	3
	Union Approved Apprenticeship	8

Minimum Credits Required for the Program: 67

Notes:

**UA students may use UAT 210 Public Speaking (1.5 credits) and UAT 213 Planning and Presenting Lessons (1.5 credits)*

Program Information Report

Industrial Training (ASINDT)

Associate in Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

This program gives indentured journeymen of the United Association or Ironworkers, the opportunity to apply their work as certified apprentice instructors toward an associate in science degree in Industrial Training. Students will complete the general education courses, five summer instructor training sessions, and receive non-traditional credits for experience in an area of specialization such as plumbing, pipefitting, HVAC, sprinkler fitting and ironworking.

Articulation:
Davenport University, Bachelor degree;
Eastern Michigan University, several BS degrees;
Ferris State University, Bachelor degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Open only to United Association and Ironworker instructors.

Major/Area Requirements		(12 credits)
	UA students must complete 12-15 additional credits from a combination of required teaching methods courses and technical update courses (UAT courses).	12-15
	Ironworker students must complete 15 credits from a combination of required teaching methods courses and technical update courses (IWT courses).	

General Education Requirements		(30 credits)
Writing	Elective(s)	6-7
UAT 210	Public Speaking*	1.5
UAT 213	Planning and Presenting Lessons*	1.5
Math	MTH 169 or higher	3-4
Nat. Sci.	Must contain a lab	3-4
Soc. Sci.	Elective(s)	6
Arts/Human.	Elective(s)	6
Computer Lit.	Elective(s)	3

**Students may choose any WCC courses that meet the speech requirement. Only applies to UA programs.*

Minimum Option Credits Required for the Program: 19
Complete a specialization in plumbing, pipefitting, HVAC, sprinkler fitting or ironworking. Students should apply for non-traditional credit evaluation of their apprenticeship experiences to meet the specialization requirement.

Industrial Training Options

Architectural and Ornamental Ironworker (AOIW)		(19 credits)
IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 131	Introduction to Metal Building	2
IWA 161	Introduction to Architectural and Ornamental Ironwork	2
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1
IWA 265	Advanced Architectural and Ornamental Ironwork	6

HVAC Specialty (HVTC)		(26 credits)
UAE 140	Introduction to HVACR Service Technician Practices	3
UAE 142	Soldering and Brazing	3
UAE 144	Refrigeration	2
UAE 146	Air Conditioning	2
UAE 148	Electrical Controls	2
UAE 150	DC Electronics	2
UAE 152	Advanced Electrical Controls and Pneumatic Controls	3
UAE 154	Advanced Air Conditioning and Refrigeration	3
UAE 156	Air and Water Balancing and Motor Alignment	3
UAE 158	Advanced HVACR Practices	3

Program Information Report

Journeyman Ironworker (JMIW)		(26 credits)
IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 131	Introduction to Metal Building	2
IWA 141	Introduction to Reinforcing Ironwork	3
IWA 155	Rigging/Machinery Mover II	3
IWA 161	Introduction to Architectural and Ornamental Ironwork	2
IWA 172	Introduction to Structural Features	4
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1
IWA 272	Advanced Structural Features	3

Metal Building Erector (MTBE)		(19 credits)
IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 131	Introduction to Metal Building	2
IWA 161	Introduction to Architectural and Ornamental Ironwork	2
IWA 172	Introduction to Structural Features	4
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1
IWA 235	Advanced Metal Building	2

Pipefitter Specialty (PIPE)		(26 credits)
UAF 102	Introduction to Arc Welding, Soldering, and Brazing	3
UAF 120	Introduction to Pipefitter Practices	3
UAF 122	Drawing Interpretation and Plan Reading	2
UAF 124	Oxy Fuel Cutting and Shielded Arc Welding	2
UAF 126	Hydronic Heating and Steam Systems	2
UAF 128	Refrigeration and Electrical Controls	2
UAF 130	Advanced SMAW Welding	3
UAF 132	Advanced Pipefitter Topics	3
UAF 134	Controls and Instrumentation	3
UAF 136	GTAW Welding	3

Plumber Specialty (PLUM)		(26 credits)
UAP 100	Introduction to Plumbing Practices	3
UAP 102	Introduction to Arc Welding, Soldering and Brazing	3
UAP 104	Drawing Interpretation and Plan Reading	2
UAP 106	Oxy Fuel Cutting and Shielded Arc Welding	2
UAP 108	Water Supply and Drainage	2
UAP 110	Customer Service Techniques	2
UAP 112	Plumbing Fixtures and Appliances	3
UAP 114	Plumbing Codes and Regulations	3
UAP 116	Medical Gas and Backflow Prevention Techniques	3
UAP 118	Advanced Plumbing Practices	3

Reinforcing Ironworker (REIW)		(19 credits)
IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 141	Introduction to Reinforcing Ironwork	3
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1
IWA 241	Advanced Reinforcing Ironwork	7

Rigger/Machinery Mover (RGMM)		(19 credits)
IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 151	Rigging/Machinery Mover I	3
IWA 155	Rigging/Machinery Mover II	3
IWA 191	Reinforced Iron and Structures for Rigging	4
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1

Sprinkler Fitter Specialty (SPRF)		(26 credits)
UAR 160	Introduction to Sprinkler Fitter Practices	3
UAR 162	Basic Drawing and Introduction to Automatic Sprinklers	3

Program Information Report

UAR 164	Reading Automatic Sprinkler Piping Drawings	2
UAR 166	Installation of Sprinkler Systems	2
UAR 168	Architectural Working Drawings and Blueprint Reading for Sprinkler Fitters	2
UAR 170	Sprinkler Water Supply and The Automatic Sprinkler	2
UAR 172	Types of Fire Protection Systems and Alarms	3
UAR 174	Special Application Sprinkler Systems and Hydraulics	3
UAR 176	Human Relations	3
UAR 178	Technical Writing	3
Trade Related Elective Credits (TRI)		**(19 credits)**
	Trade Related Elective Credits (19-26)	19-26

Minimum Credits Required for the Program: 61

Program Information Report

School of Automotive and Motorcycle Technology

If you are looking for the best technical training in the automotive or motorcycle field, WCC's School of Automotive and Motorcycle Technology is the place for you. Whether your focus is finding employment as a technician, learning about performance equipment, or creating a custom look, our introductory and advanced certificate programs, as well as associate degrees, will enhance your personal and professional qualifications. These programs offer the perfect blend of classroom and hands-on education not available in many other educational settings.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

After completing a certificate, students can progress to the next level, the advanced certificate. The credit hours required for these programs also vary. This type of certificate provides a more specialized level of skill development, and often allows students to upgrade their positions at their places of employment.

The next level, an Associate in Applied Science, is available for some programs. For some career fields, it is possible to earn a certificate, advanced certificate (if one exists), and an Associate in Applied Science degree in the same field. In these cases, the credit hours from the certificate and advanced certificate can be applied to the credit hours needed for the Associate in Applied Science degree.

Alternatively, students can earn an AAS in Occupational Studies by completing a certificate, advanced certificate and General Education requirements.

Auto Body Repair

These programs help prepare the student for various positions in the auto body repair industry.

Program Information Report

Auto Body Repair (CTAUBR)

Certificate

Program Effective Term: Fall 2017

High Demand Occupation High Wage Occupation

This certificate will appeal to a wide array of automobile enthusiasts. Only aspiring body technicians and painters, individuals with an interest in custom cars, hobbyists, and those wishing to start a career in the collision repair industry, need apply. Through the use of NATEF approved curriculum, students will develop core skills such as dent removal, panel replacement, welding, and automobile refinishing techniques and collision-related mechanical repair. Emphasis is placed on preparing students for employment in an ever-changing workplace that adheres to A.S.E. and I-Car standards associated with the collision repair industry. This certificate also provides a stepping-stone to WCC's Advanced Auto Body certificates.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Major/Area Requirements		**(20 credits)**
Elective	Must take 5 classes totaling 20 credits:	
ABR 111	Introduction to Auto Body Repair	4
ABR 112	Introduction to Automotive Refinishing	4
ABR 123	Technical Auto Body Repair	4
ABR 124	Technical Automotive Refinishing	4
ABR 113 or	Estimating and Shop Operations	
ABR 135	Collision-Related Mechanical and Electrical Repairs	4

Required Support Courses		**(10 credits)**
Elective	Take an additional 10 credits from the list below. Courses taken to meet the 20 credits for the Major/Area Requirements may not be selected:	
ABR 113 or	Estimating and Shop Operations	
ABR 114 or	Applied Auto Body Welding	
ABR 116 or	The Evolution of the Automobile	
ABR 119 or	The Art of Metal Shaping	
ABR 130 or	Custom Painting	
ABR 135 or	Collision-Related Mechanical and Electrical Repairs	
ABR 174 or	ABR Co-op Education I	
ABR 230 or	Advanced Auto Body V: Advanced Auto Refinish Applications	
ABR 231 or	Project Management and Implementation in Auto Body	
ABR 274	ABR Co-op Education II	10-10

Minimum Credits Required for the Program: 30

Program Information Report

Collision Repair and Refinish Technician (CVCRR)

Advanced Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Wage Occupation**

This advanced certificate was developed for the individual who would like to focus on a career in the collision repair and refinishing industry. Through the use of select modules and vehicles, students will develop and apply advanced welding techniques, damage analysis, structural and non-structural repair, panel replacement and refinishing techniques. Additional topics such as related mechanical and electrical repairs, overall paint jobs, color theory, and the tinting of factory colors to obtain a blendable match will be covered. Current NATEF, I-Car and ASE standards are followed and satisfactory completion of this certificate prepares students for possible entry level employment in today's competitive and fast paced collision repair industry.

Major/Area Requirements		(16 credits)
CRT 202	Refinish Technician I	4
CRT 203	Collision Technician I	4
CRT 222	Refinish Technician II	4
CRT 223	Collision Technician II	4

Minimum Credits Required for the Program: **16**

Automotive Services

Automotive services programs help prepare students for work in automotive related service or technical positions.

Program Information Report

Automotive Services Technician (CTASVT)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This program prepares students for employment as a certified automotive technician. Students will diagnose and repair malfunctions in automobile engines, suspensions and steering systems, brakes, electrical and electronic systems and engine drivability issues. This program also offers opportunities to explore vehicle performance, diesel, alternative fuel vehicles, hybrid vehicles and to participate in the building of performance vehicles. The program prepares the student for the State of Michigan Mechanic Certification tests as well as the National Institute for Automotive Service Excellence (ASE) Certification Exams.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Major/Area Requirements		**(36 credits)**
ASV 130	Automotive Maintenance	4
ASV 131	Automotive Electrical	4
ASV 132	Automotive Engines	4
ASV 133	Automotive Fuel	4
ASV 134	Automotive Transmissions	4
ASV 254	Suspension and Steering	2
ASV 255	Brakes	2
ASV 256	Electrical and Electronic Systems	4
ASV 258	Engine Drivability	2
	Select 2 credits from the following: ABR 116, ASV 135, MTT 102 or WAF 105	2
	Select 4 credits from the following: ASV 135, ASV 174, ASV 251, ASV 252, ASV 253, ASV 257, ASV 259, ASV 263, ASV 267, ASV 269, ASV 270, ASV 277 or ASV 279	4

Minimum Credits Required for the Program: **36**

Program Information Report

Automotive Service Technology (APASRV)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

This AAS degree program prepares students for employment in an automotive related technical position or as a certified automotive technician. Students will diagnose and repair malfunctions in automobile engines, suspensions and steering systems, brakes, electrical and electronic systems and engine drivability issues. This program also offers opportunities to explore vehicle performance, diesel, alternative fuel and hybrid vehicles and to participate in the building of performance vehicles. The program prepares the student for the State of Michigan Mechanic Certification tests as well as the National Institute for Automotive Service Excellence (ASE) Certification Exams.

First Semester		(16 credits)
ASV 130	Automotive Maintenance	4
ASV 131	Automotive Electrical	4
	Math Elective(s)	3-4
	Writing Elective(s)	3-4
	Select 2 credits: ABR 116, ASV 135, MTT 102 or WAF 105	2

Second Semester		(15 credits)
ASV 132	Automotive Engines	4
ASV 133	Automotive Fuel	4
ASV 134	Automotive Transmissions	4
Elective	Computer Lit. Elective(s)	3

Third Semester		(16 credits)
ASV 254	Suspension and Steering	2
ASV 255	Brakes	2
ASV 256	Electrical and Electronic Systems	4
ASV 258	Engine Drivability	2
Elective	Arts/Human. Elective(s)	3
Elective	Speech Elective(s)	3

Fourth Semester		(13 credits)
Elective	Nat. Sci. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3
	Restricted Elective(s) Select 3-4 credits from: ASV 135, ASV 174, ASV 251, ASV 252, ASV 253, ASV 257, ASV 259, ASV 263, ASV 267, ASV 269, ASV 270, ASV 277 or ASV 279	3-4
	Elective Complete electives (3-4 credits) to total 60 credits	4
	Optional courses to meet MTA*	

Minimum Credits Required for the Program: 60

Notes:

**Students may elect to take the following optional courses in Semester 5 to meet MTA:*
-Arts and Humanities Elective 3 credits
-Natural Science Elective 3-4 credits
-Social Science Elective 3 credits

Program Information Report

Automotive Test Technician (APATT)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

In this program, students will be introduced to the test and data acquisition processes used in automotive testing. Students will learn to assemble and disassemble components for automotive testing. Diagnosis, maintenance and proper operation of complex data acquisition equipment are essential. Students will learn to monitor and calibrate testing instruments. Job possibilities include working in a crash lab or other testing facility.

First Semester		(15 credits)
ASV 131	Automotive Electrical	4
ASV 132	Automotive Engines	4
MTT 102	Machining for the Technologies	2
WAF 105	Introduction to Welding Processes	2
Elective	Writing Elective(s)	3-4

Second Semester		(15 credits)
ASV 135	Facility Operations	3
ASV 256	Electrical and Electronic Systems	4
MEC 101	3D Modeling and Blueprint Reading	2
Elective	Arts/Human. Elective(s)	3
Elective	Computer Lit. Elective(s)	3

Third Semester		(14 credits)
ASV 277	Automotive Powertrain Systems	4
WAF 200	Layout Theory Welding	3
Elective	Math Elective(s)	4
Elective	Speech Elective(s)	3

Fourth Semester		(16 credits)
ASV 270	Automotive Test and Development	4
ATT 203	Lightening Materials in Transportation	3
Elective	Nat. Sci. Elective(s)	4
Elective	Soc. Sci. Elective(s)	3
Elective	Elective(s) credits to reach a minimum of 60 credits	2

Minimum Credits Required for the Program: 60

Notes:

**Students may elect to take the following optional courses in Semester 5 to meet MTA:*
-Arts and Humanities Elective (3 credits)
-Natural Science Elective (3-4 credits)
-Social Science Elective (3 credits)

Program Information Report

Powertrain Development Technician (APPDT)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

In this program, students will develop the knowledge and skills to perform in-car powertrain testing in unique testing environments. Jobs in this area require knowledge of automotive engine and electrical systems and experience with an automotive dynamometer. Students will learn about dynamometer setup and testing including the operation of complex analytical test equipment and test software.

First Semester		(15 credits)
ASV 131	Automotive Electrical	4
ASV 132	Automotive Engines	4
MTT 102	Machining for the Technologies	2
WAF 105	Introduction to Welding Processes	2
Elective	Writing Elective(s)	3-4

Second Semester		(16 credits)
ASV 256	Electrical and Electronic Systems	4
MEC 101	3D Modeling and Blueprint Reading	2
WAF 106	Welding Print Reading	3
Elective	Computer Lit. Elective(s)	3
Elective	Nat. Sci. Elective(s)	4

Third Semester		(15 credits)
ASV 277	Automotive Powertrain Systems	4
ASV 279	Automotive Dynamometer and Test	4
WAF 200	Layout Theory Welding	3
Elective	Math Elective(s)	4

Fourth Semester		(16 credits)
ASV 135	Facility Operations	3
MST 220	Dynamometer Operations	4
Elective	Arts/Human. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3
Elective	Speech Elective(s)	3

Minimum Credits Required for the Program: 62

Notes:

**Students may elect to take the following optional courses in Semester 5 to meet MTA:*
-Arts and Humanities Elective (3 credits)
-Natural Science Elective (3-4 credits)
-Social Science Elective (3 credits)

Custom Cars and Concepts

Develop advanced skills in the customization of the auto body through the completion of these advanced certificates.

Program Information Report

Custom Auto Body Fabrication and Chassis Design (CVABFC)

Advanced Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Wage Occupation**

The Custom Auto Body Fabrication and Chassis Design certificate focuses on advanced body and paint techniques used to customize automobiles and turn them into "rolling showpieces." Students will expand on knowledge acquired in the Auto Body Repair program. Working in teams, students will build, complete and show a project vehicle. Students will learn advanced sheet metal fabrication and construction of a custom automobile chassis. Areas of study will include various types of building materials and their uses, measurement, pattern development, mechanical drawing, fastener selection, MIG and TIG welding and frame design and suspension types. Other topics such as candies, pearls, tri-stage paint jobs and the application of custom graphics will be discussed. Upon acquiring this advanced certificate, employment possibilities may include specialty shop technician, custom paint technician and metal fabricator/welder.

Major/Area Requirements		**(16 credits)**
CCC 210	Custom Auto Body Technician I	4
CCC 215	Custom Fabrication and Chassis Design I	4
CCC 250	Custom Auto Body Technician II	4
CCC 255	Custom Fabrication and Chassis Design II	4

Minimum Credits Required for the Program: **16**

Motorcycle Service Technology

Prepare for a career as a motorcycle mechanic or build upon skills already developed.

Program Information Report

Motorcycle Service Technology I (CTMST1)

Certificate

Program Effective Term: **Fall 2017**

High Skill Occupation

This purpose of the Motorcycle Service Technology I program is to provide the student with fundamental certification as a motorcycle technician. The student will receive skill training in service department operations, vehicle set-up, mileage-based maintenances, and damage repair estimating. Areas of instruction include; troubleshooting, diagnosing, servicing, and the repair of primary and final drive systems, transmissions, brakes, suspensions, electrical, and induction systems. The program will provide the skills for the student to test for the State of Michigan Motorcycle Mechanics License.

Major/Area Requirements		(20 credits)
MST 110	Motorcycle Service Technology I	4
MST 120	Motorcycle Service Technology II	4
MST 130	Motorcycle Service Technology III	4
MST 140	Motorcycle Service Technology IV	4
MTT 102	Machining for the Technologies	2
WAF 105	Introduction to Welding Processes	2

Minimum Credits Required for the Program: **20**

Program Information Report

Motorcycle Service Technology II (CVMST2)

Advanced Certificate

Program Effective Term: **Fall 2017**

High Skill Occupation

The purpose of the Motorcycle Service Technology II Advanced Certificate program is to improve the student's skills as a motorcycle technician. Emphasis is placed on engine performance technology, dynamometer operations, and welding.

Program Admission Requirements:
Completion of the Motorcycle Service Technology I Certificate.

Major/Area Requirements		(14 credits)
MST 210	Performance Engine Technology	4
MST 220	Dynamometer Operations	4
MST 225	Advanced Dynamometer Tuning Systems	4
WAF 103	Introduction to Gas Tungsten Arc Welding	2

Minimum Credits Required for the Program: **14**

Other Options for Automotive and Motorcycle Technology

Program Information Report

Welding and Fabrication Principles (CTWLDS)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Wage Occupation**

This certificate introduces students to safe welding and cutting practices and principles including, proper technique and position, weld quality requirements, destructive and non-destructive testing and examination methods, print reading and interpretation of welding symbols as well as basic metal fabrication. Students will use the foundation and working knowledge to weld in all processes, perform repair techniques using thermal cutting and gouging, apply the requirements to executive quality welds and apply CNC programming language that can be used to produce parts that can be assembled and welded. This certificate serves as a fundamental pathway into the Welding and Fabrication Advanced Applications certificate and Welding Technology degree. Students who successfully complete this certificate will have learned the skills sought by the workforce as an entry-level welder and fabricator.

Articulation:
Eastern Michigan University, several BS degress.

Copies can be obtained from the Counseling Office, a program advisor or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Requirements		(24 credits)
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
WAF 106	Welding Print Reading	3
WAF 109	Welding Safety and OSHA Regulations	2
WAF 125	Introduction to Welding Processes I	2
WAF 126	Introduction to Welding Processes II	2
WAF 130	Shielded Metal Arc Welding (SMAW)	4
WAF 131	Thermal Cutting, Gouging and Weld Repair	3
WAF 139	Basic Metal Fabrication	3
WAF 140	Inspection and Testing	3

Minimum Credits Required for the Program: **24**

Program Information Report

Welding and Fabrication Advanced Applications (CVWLDN)

Advanced Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Wage Occupation**

This advanced certificate combines welding fundamentals with more complex welding, cutting and fabrication techniques and applications aimed to further develop one's skills and core competencies. Students focus on welding using processes and positions common in industry, perform destructive and non-destructive testing, identify weld failures and perform root cause analysis, executive repair techniques, perform advanced fabrication techniques and execute automated welding and cutting programming and operations. Students who successfully complete this advanced certificate will have learned a broad range of essential skillsets critical to the trade and how to apply those skills to manufacturing, automotive, construction, aerospace, oil, military industry, gas and power industries.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Successful completion of the Welding and Fabrication Principles Certificate (CTWLDS).

Continuing Eligibility Requirements:
WAF 233 and WAF 239 require a Math Level 2.

Major/Area Requirements		(24 credits)
WAF 150	Automated Welding and Cutting	3
WAF 210	Welding Metallurgy	3
WAF 230	Advanced Shielded Metal Arc Welding (SMAW)	4
WAF 231	Gas Tungsten Arc Welding (GTAW)	4
WAF 232	Semi-Automatic Welding Processes	4
WAF 233	Submerged Arc and Flux Core Arc Welding	3
WAF 239	Advanced Metal Fabrication	3

Minimum Credits Required for the Program: **24**

Program Information Report

Welding Technology (APWLDF)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Wage Occupation

The Welding Technology program offers specialized welding and fabrication instruction through theoretical, practical and technical learning objectives and strategies. The core curriculum specializes in welding and fabrication and delves into the expanses of welding technology as a whole. Students are first introduced to welding, cutting and fabrication safety; theory and fundamentals; and then transition to more advanced welding and fabrication processes and application, such as weld quality, inspection testing and repair techniques and automated welding and cutting systems and operations. Students who successfully complete this program will have learned a diverse skillset giving them opportunities to enter the workforce as entry-level welders, fabricators, field technicians and positions them for higher learning in welding engineering, welding education or materials science.

Articulation:
Eastern Michigan University, several BS degrees;
Pennsylvania College of Technology, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

First Semester		**(14 credits)**
Elective	Math Elective(s)	3-4
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
WAF 106	Welding Print Reading	3
WAF 109	Welding Safety and OSHA Regulations	2
WAF 125	Introduction to Welding Processes I	2
WAF 126	Introduction to Welding Processes II	2

Second Semester		**(16 credits)**
Elective	Computer Elective(s)	3
WAF 130	Shielded Metal Arc Welding (SMAW)	4
WAF 131	Thermal Cutting, Gouging and Weld Repair	3
WAF 139	Basic Metal Fabrication	3
WAF 140	Inspection and Testing	3

Third Semester		**(15 credits)**
Elective	Writing Elective(s)	3-4
WAF 230	Advanced Shielded Metal Arc Welding (SMAW)	4
WAF 231	Gas Tungsten Arc Welding (GTAW)	4
WAF 232	Semi-Automatic Welding Processes	4

Fourth Semester		**(12 credits)**
Elective	Speech Elective(s)	3
WAF 150	Automated Welding and Cutting	3
WAF 210	Welding Metallurgy	3
WAF 233	Submerged Arc and Flux Core Arc Welding	3

Fifth Semester		**(12 credits)**
Elective	Arts/Human. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3-4
Elective	Soc. Sci. Elective(s)	3
WAF 239	Advanced Metal Fabrication	3

Minimum Credits Required for the Program: 69

School of Business and Entrepreneurial Studies

Learn the fundamentals you will need to become a business leader or entrepreneur. These programs help you develop entry-level skills in various aspects of business. Whether your goal is to make your place in an existing industry or branch out on your own, these programs can provide the foundation for success.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

After completing a certificate, students can progress to the next level, the advanced certificate. The credit hours required for these programs also vary. This type of certificate provides a more specialized level of skill development, and often allows students to upgrade their positions at their places of employment.

The next level, an Associate in Applied Science, is available for some programs. For some career fields, it is possible to earn a certificate, an advanced certificate, and an Associate in Applied Science degree in the same field. In these cases, the credit hours from the certificate and advanced certificate can be applied to the credit hours needed for the Associate in Applied Science degree.

Alternatively, students can earn an AAS in Occupational Studies by completing a certificate, advanced certificate (if one exists) and General Education requirements.

Accounting

Accounting and tax services, CPA firms and small businesses need employees with accounting skills. These programs can provide the skills needed for entry-level positions

Program Information Report

Accounting for Business (CTACCB)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation**

Program is also available online

This program prepares students for entry-level positions with accounting and tax services, CPA firms, and small businesses where they will provide accounting skills, computer skills, and office support. It also gives students credit that can be applied toward the Associate's Degree in Accounting.

Major/Area Requirements		**(21 credits)**
ACC 100 or	Accounting Practices for Business	
ACC 111	Principles of Accounting I*	3
ACC 110	Payroll Accounting	2
ACC 131	QuickBooks Software	3
BOS 184	Spreadsheet Software Applications I	3
CIS 110	Introduction to Computer Information Systems	3
Elective	MTH 125, MTH 160, MTH 176 or MTH 181	4
TAX 101	Income Taxes for Individuals	3

Minimum Credits Required for the Program: **21**

Notes:

**Students earning an AAS degree in Accounting are required to complete ACC 111.*

Program Information Report

Accounting (APACCT)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation

Program is also available online

This program prepares students for jobs with duties assigned to a beginning accountant such as verifying additions, checking audits, postings, and vouchers, analyzing accounts, and preparing financial statements. Many of the courses transfer to four-year colleges, including programs at Eastern Michigan University, Madonna University, and Walsh College. If the primary goal is to transfer into a bachelor's of business administration program in accounting, consider the Business Transfer program.

Articulation:
Cleary University, BBA or BS degree;
Davenport University, BBA degree;
Eastern Michigan University, BBA or BS degree;
Kaplan University, BS degree;
Walsh College, BBA or BS degree
Wayne State University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Students must have:
-Academic Math Level of 3 to enroll in MTH 125 and MTH 160
-Academic Math Level of 4 to enroll in MTH 176 or MTH 181

First Semester		(14 credits)
ACC 111	Principles of Accounting I	3
BOS 184	Spreadsheet Software Applications I	3
ENG 111	Composition I	4
MTH 125 or	Everyday College Math	
MTH 160 or	Basic Statistics	
MTH 176 or	College Algebra	
MTH 181	Mathematical Analysis I	4

Second Semester		(12 credits)
ACC 122	Principles of Accounting II	3
ACC 131	QuickBooks Software	3
CIS 110	Introduction to Computer Information Systems	3
TAX 101	Income Taxes for Individuals	3

Third Semester		(15 credits)
ACC 213	Intermediate Accounting I	3
BMG 111	Business Law I	3
BMG 140	Introduction to Business	3
ECO 211	Principles of Economics I	3
	Arts/Human. Elective(s)*	3

Fourth Semester		(13 credits)
ACC 214	Intermediate Accounting II	3
BMG 265	Business Statistics	3
ECO 222	Principles of Economics II	3
	Nat. Sci. Elective(s)	4

Fifth Semester		(11 credits)
ACC 110	Payroll Accounting	2
ACC 225	Managerial Cost Accounting	3
BMG 207	Business Communication	3
COM 101	Fundamentals of Speaking	3

Minimum Credits Required for the Program: 65

Program Information Report

Notes:

**See the EMU Diverse World Requirement list.*

University of Michigan - Ann Arbor Business School does not accept business or accounting courses from community colleges. If you wish to transfer into an accounting major at UM, please see a counselor.

Business

Choose one or more areas in the field of business as you prepare for your future.

Program Information Report

Applied Data Science (CTADS)

Certificate

Program Effective Term: Fall 2017

The Applied Data Science certificate is intended for students who want to pursue a career in data analytics ("big data") or enhance their current business skills. Students learn how to capture, manipulate, and analyze structured data-the massive volume of numeric values that can be easily stored and sorted. They learn how to transform data into information to enable faster and more intelligent decision-making.

Continuing Eligibility Requirements:
Minimum grade of "C" in major/area courses.

Major/Area Requirements		(17 credits)
BMG 265	Business Statistics	3
BMG 275	Business and Supply Chain Analytics	4
BMG 285 or	Applied Data Analytics	
CIS 285	Applied Data Analytics	4
CIS 110	Introduction to Computer Information Systems	3
CIS 282	Database Principles and Application	3

Minimum Credits Required for the Program: 17

Program Information Report

Business Sales and Marketing (CTBSLM)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This program prepares students for immediate employment in sales jobs that require skills in sales presentation, negotiation, customer service, display preparation, inventory analysis, and basic market research. The courses in this program may be applied toward an Associate in Applied Science degree in Management.

Program Admission Requirements:
Competency in keyboarding is necessary for success in this program. If students need to improve keyboarding skills, take BOS 101A before beginning the program.

Major/Area Requirements		(12 credits)
BMG 160	Principles of Sales	3
BMG 205	Creating the Customer Experience	3
BMG 207	Business Communication	3
BMG 155 or	Business on the Internet*	
BMG 250	Principles of Marketing	3
Minimum Credits Required for the Program:		**12**

Notes:

**It is advised that students planning to transfer to EMU complete BMG 155 because BMG 250 is a required course in the EMU business program.*

Program Information Report

Core Business Skills (CTBCS)

Certificate

Program Effective Term: Fall 2017

The purpose of this program is to provide a series of courses so students gain a basic understanding of business and the core foundation of business principles. The goal is to provide students the opportunity to combine this certificate with a number of other business certificates as they progress toward an associate's degree. The courses in this program are required in WCC's Business Associate in Arts Degree and the Accounting Associate in Applied Science programs. This certificate also supports WCC's Management, Retail and Supply Chain associate degree programs offered by the School of Business and Entrepreneurial Studies and supports any of the occupational programs where students will be working in a business setting.

Program Admission Requirements:
An Academic Math Level is required for CIS 110, ACC 111 and BMG 265.

Major/Area Requirements		(21 credits)
ACC 111	Principles of Accounting I	3
ACC 122	Principles of Accounting II	3
BMG 111	Business Law I	3
BMG 140	Introduction to Business	3
BMG 207	Business Communication	3
BMG 265	Business Statistics	3
CIS 110	Introduction to Computer Information Systems	3
Minimum Credits Required for the Program:		**21**

Program Information Report

Human Resource Management (HRM) (CTHRMG)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Wage Occupation**

This program prepares students for entry-level jobs as a human resource assistant or specialist where they will be assisting in activities that range from recruiting, interviewing and hiring job candidates to evaluating jobs, negotiating contracts, and ensuring company compliance with equal opportunity regulations. This program also provides students with basic management skills that will improve their ability to manage people.

Major/Area Requirements		**(17 credits)**
ACC 110	Payroll Accounting	2
BMG 150	Labor-Management Relations	3
BMG 200	Relationship Skills in the Workplace	3
BMG 240	Human Resources Management	3
BMG 279	Performance Management	3
CIS 100 or	Introduction to Computer Productivity Apps	
CIS 110	Introduction to Computer Information Systems	3

Minimum Credits Required for the Program: **17**

Program Information Report

Retail and Business Operations (CTRBUS)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

Program is also available online

It takes a large number of people working in customer-facing roles as well as behind-the-scenes in a retail operation to keep employees, customers and investors happy. Students who complete this certificate will be knowledgeable, capable and enthusiastic employees who can procure, display and deliver products and services to customers profitable in a retail setting. Students will gain the skills and expertise needed to manage retail projects as well as make and communicate decisions related to human resources, profits, productivity and processes when managing the operations aspect of a business unit.

Major/Area Requirements		**(16 credits)**
BMG 205	Creating the Customer Experience	3
BMG 206	Retail Principles and Practices	3
BMG 228	Purchasing and Inventory Control	3
BMG 273	Managing Operations	3
BMG 275	Business and Supply Chain Analytics	4

Minimum Credits Required for the Program: **16**

Program Information Report

Supply Chain Operations (CTSCO)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

Program is also available online

Students who complete this certificate will be knowledgeable, capable and enthusiastic employees who can effectively perform in a supply chain setting which involves coordinating suppliers, manufacturers, distributors and retailers to ensure that products and services are available to the final consumer in a timely and cost-effective fashion while maintaining the service level customers demand. As part of the program, students will be ready to take the tests needed to receive their CLA (Certified Logistics Associate) and CLT (Certified Logistics Technician) industry certifications.

Major/Area Requirements		**(16 credits)**
BMG 181	Introduction to Supply Chain Management	3
BMG 182	Warehousing and Logistics	3
BMG 226	Transportation and Logistics	3
BMG 228	Purchasing and Inventory Control	3
BMG 275	Business and Supply Chain Analytics	4

Minimum Credits Required for the Program: **16**

Program Information Report

Management (CVMNGA)

Advanced Certificate

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

This advanced certificate offers students in any occupation or trade an opportunity to acquire skills to supervise an operation by learning and applying basic management principles through case studies and exercises. Upon completing this program, students will be able to use various tools to manage an operation which includes developing goals, organizing work activities, promoting desired employee performance, and monitoring productivity with a customer focus. Emphasis will be placed on developing skills that will involve both a critical and creative approach to management problem-solving activities. The advanced certificate may also be applied toward a WCC Associate in Applied Science Degree.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Successful completion of a career certificate or degree program or equivalent work experience. CIS 100 with a "C-" or better or equivalent skills.

Major/Area Requirements		(12 credits)
BMG 230	Management Skills	3
BMG 273	Managing Operations	3
BMG 279	Performance Management	3
BMG 291	Project Management	3

Minimum Credits Required for the Program: 12

Program Information Report

Management (APMNGD)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

Some employers require or prefer employees to have an associate degree as a condition for employment or for advancement. Students can earn an Associate in Applied Science Degree in Management, by completing the requirements listed below. See an advisor to develop a plan and select appropriate courses for this program.

Articulation:
Davenport University, Bachelor degree;
Eastern Michigan University, BBA degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

First Semester		**(12 credits)**
	Arts/Human. Elective(s)	3
	Writing Elective(s)	3-4
	Speech Elective(s)	3
	Computer Lit. Elective(s)	3

Second Semester		**(12 credits)**
	Math Elective(s)	3-4
	Nat. Sci. Elective(s)	3-4
Elective	Occupational/Technical Course 1*	3
Elective	Occupational/Technical Course 2*	3

Third Semester		**(12 credits)**
Elective	Occupational/Technical Course 3*	3
Elective	Occupational/Technical Course 4*	3
Elective	Occupational/Technical Course 5*	3
Elective	Restricted ACC, BMG, CIS, and/or WEB elective	3

Fourth Semester		**(12 credits)**
BMG 230	Management Skills	3
BMG 273	Managing Operations	3
Elective	Restricted ACC, BMG, CIS, and/or WEB elective	3
	Soc. Sci. Elective(s)	3

Fifth Semester		**(12 credits)**
BMG 279	Performance Management	3
BMG 291	Project Management	3
Elective	Restricted ACC, BMG, CIS, and/or WEB elective	3
Elective	Restricted ACC, BMG, CIS, and/or WEB elective	3

Minimum Credits Required for the Program: 60

Notes:

**Complete a certificate or degree in any occupational/technical area plus additional related credits to equal a minimum of 15 credit hours.*

Program Information Report

Retail Management (APRM)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

This program prepares students to be knowledgeable, capable and enthusiastic employees who can handle both customer-facing and behind-the-scenes jobs in a retail setting. These retail jobs can be divided into four main areas: customer relations, store upkeep, product handling and administration. Students who complete this associates degree will have had exposure to all four of these areas, and they will gain the skills and knowledge to project a can-do, professional and results-focused attitude.

Students will take restricted electives toward completing a certificate as part of the program requirement in one of the following areas (9-16 credits): Accounting for Business Certificate, Human Resource Management (HRM) Certificate, Business Sales and Marketing Certificate, Entrepreneurship and Innovation Certificate, Management Advanced Certificate or a Certificate or Degree in any occupational/technical area

Articulation:
Eastern Michigan University, BBA degree

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

First Semester		**(15 credits)**
BMG 205	Creating the Customer Experience	3
BMG 206	Retail Principles and Practices	3
	Computer Lit. Elective(s)	3
	Writing Elective(s)	3-4
	Restricted Elective(s) 1: Select a course toward completion of a certificate.	3

Second Semester		**(16 credits)**
BMG 228	Purchasing and Inventory Control	3
	Arts/Human. Elective(s)	3
MTH 125 or	Everyday College Math	
MTH 160 or	Basic Statistics	
	Math Elective(s) Any math level 4 or higher course	4
	Speech Elective(s)	3
	Restricted Elective(s) 2: Select a course toward completion of a certificate.	3

Third Semester		**(15 credits)**
BMG 230	Management Skills	3
	Nat. Sci. Elective(s)*	3
	Soc. Sci. Elective(s)	3
	Restricted Elective(s) 3: Select a course toward completion of a certificate.	3
	Restricted Elective(s) 4: Select a course toward completion of a certificate.	3

Fourth Semester		**(15 credits)**
BMG 273	Managing Operations	3
BMG 275	Business and Supply Chain Analytics	4
BMG 295	Supply Chain Field Studies	2
	Elective(s) to reach a minimum of 60 credits.	6

Minimum Credits Required for the Program: 61

Notes:

**Students who plan to transfer should elect a lab-based Natural Science course. They should also meet with an advisor to ensure MACRAO requirements are met.*

Program Information Report

Supply Chain Management (APSCM)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

This program prepares students to be knowledgeable, capable and enthusiastic employees who can effectively perform in a supply chain environment. Students will learn the principles and practices of managing, marketing, selling, promoting and distributing retail goods and services. They will also learn how to align supply chain strategies with corporate goals to coordinate suppliers, manufacturers, distributors and retailers, ensuring products and services are available to the final consumer in a timely and cost-effective manner while meeting customer service demands. As part of the program, students will be ready to take the tests needed to receive their CLA (Certified Logistics Associate) and CLT (Certified Logistics Technician) industry certification.

Articulation:
Eastern Michigan University, BBA degree;
Wayne State University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

First Semester		**(15 credits)**
BMG 181	Introduction to Supply Chain Management	3
BMG 182	Warehousing and Logistics	3
BMG 205	Creating the Customer Experience	3
BMG 206	Retail Principles and Practices	3
Elective	Computer Lit. Elective(s)	3

Second Semester		**(16 credits)**
BMG 226	Transportation and Logistics	3
BMG 228	Purchasing and Inventory Control	3
Elective	Arts/Human. Elective(s)	3
MTH 125 or	Everyday College Math	
MTH 160 or	Basic Statistics	
Elective	Math Elective(s) Any math level 4 or higher course	4
Elective	Speech Elective(s)	3

Third Semester		**(14 credits)**
BMG 230	Management Skills	3
BMG 273	Managing Operations	3
BMG 275	Business and Supply Chain Analytics	4
Elective	Nat. Sci. Elective(s)*	4

Fourth Semester		**(15 credits)**
BMG 295	Supply Chain Field Studies	2
Elective	Soc. Sci. Elective(s)	3
Elective	Writing Elective(s)	4
Elective	Electives to reach a minimum of 60 credits	6

Minimum Credits Required for the Program: 60

Notes:

**Select a lab-based course. Students who plan to transfer should meet with an advisor to ensure MACRAO requirements are met.*

Program Information Report

Business (AABAS)

Associate in Arts Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

This program prepares students for transfer to a bachelor's of business administration degree program at a four-year college or university, where they will further improve their communication and interpersonal skills while developing a specialty in accounting, economics, finance, management, or some other aspect of business. The program was specifically designed to transfer to Eastern Michigan University. Check with an advisor for information on transferring to other colleges. See the footnotes for transferring to the University of Michigan.

Articulation:
Cleary University, BS or BBA degree;
Davenport University, Bachelor degree;
Eastern Michigan University, BBA degree*;
Ferris State University, BS degree;
Kaplan University, BS degree;
Madonna University, BS degree;
Northwood University, BBA degree;
University of Michigan-Flint, BA degree;
Walsh College, BA or BBA degree
Wayne State University, BS degree.

*A minimum cumulative GPA of 2.5 is required for admission to EMU's College of Business. All courses must be completed with a minimum grade of "C" (2.0) to transfer. Contact the College of Business Undergraduate Advising Office at EMU early to have transfer credits reviewed and unofficially evaluated. (734-487-2344 or email cob_undergraduate@emich.edu)

This program can meet the Michigan Transfer Agreement (MTA). Students must have their transcripts certified for MTA completion by the WCC Student Records Office.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Students must have:
- Academic Math Level of 3 to enroll in MTH 125 and MTH 160
- Academic Math Level of 4 to enroll in MTH 176 or MTH 181

First Semester		(17 credits)
ACC 111	Principles of Accounting I	3
BMG 140	Introduction to Business	3
CIS 110	Introduction to Computer Information Systems	3
ENG 111	Composition I	4
MTH 125 or	Everyday College Math	
MTH 160 or	Basic Statistics	
MTH 176 or	College Algebra	
MTH 181	Mathematical Analysis I	4

Second Semester		(13 credits)
ACC 122	Principles of Accounting II	3
BMG 207	Business Communication	3
ENG 226	Composition II	3
	Nat. Sci. Elective(s)*	4

Third Semester		(15 credits)
BMG 111	Business Law I	3
BMG 265	Business Statistics	3
COM 101	Fundamentals of Speaking	3
ECO 211	Principles of Economics I	3
	Soc. Sci. Elective(s)**	3

Fourth Semester		(15 credits)
ECO 222	Principles of Economics II	3

Program Information Report

Arts/Human. Elective(s)***	3
Arts and Humanities Elective(s) ***	3
Nat. Sci. Elective(s)*****	3-4
Complete a BMG or CIS course as needed to bring the program total to a minimum of 60 credits.****	3

Minimum Credits Required for the Program: 60

Notes:

**Students transferring to a four-year institution should choose a lab-based, Michigan Transfer Agreement (MTA)-approved science course.*
***See the MTA list to make course selections from any discipline except ECO.*
****See the EMU Diverse World Requirement list. A course in logic or ethics (PHL 205 or PHL 250) is strongly recommended. Students must complete Arts and Humanities courses from two different disciplines to meet MTA.*
*****See an advisor to choose courses that transfer to and meet the requirements of the program and college to which you are transferring.*
******Students following the Michigan Transfer Agreement (MTA) should complete a second natural science course in a second discipline.*

University of Michigan School of Business does not accept business or accounting courses from community colleges. If you wish to transfer to a business major at UM, please see a counselor.

Business Office Systems

Whether you are just starting out in an office or advancing to a high-level administrative or executive assistant position, these programs can help you achieve your goals.

Program Information Report

Administrative Assistant I (CTADA)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

Program is also available online

This program prepares students for immediate employment in entry-level information processing, receptionist, and general office positions. Students will obtain skills in document formatting, electronic organization and collaboration, record management, and Internet communication and scheduling. It also gives students credits that can be used toward an associate degree in Business Office Administration.

Major/Area Requirements		(18 credits)
BMG 155	Business on the Internet	3
BMG 207	Business Communication	3
BOS 101C	Advanced Keyboarding	1
BOS 157	Word Processing and Document Formatting I	3
BOS 184	Spreadsheet Software Applications I	3
BOS 206	Personal Management Application and Internet Resources	2
BOS 257	Word Processing and Document Formatting II	3

Minimum Credits Required for the Program: **18**

Program Information Report

Computer Software Applications (CTCSSC)

Certificate

Program Effective Term: Fall 2017

Program is also available online

This program provides computer skills training in seven office software applications, using the Microsoft Office Suite as well as a Web browser. These courses are primarily intended for students preparing for careers in the administrative office support area. The courses also give students skills that can be applied toward careers in computer application support and records management. It is recommended that students completing the software applications program be able to key at least 40 words per minute.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Major/Area Requirements		(19 credits)
BOS 106	Electronic Planning, Sharing and Organization	3
BOS 157	Word Processing and Document Formatting I	3
BOS 182	Database Software Applications	3
BOS 184	Spreadsheet Software Applications I	3
BOS 206	Personal Management Application and Internet Resources	2
BOS 207	Presentation Software Applications	2
BOS 208	Desktop Publishing for the Office	3

Minimum Credits Required for the Program: 19

Program Information Report

Administrative Assistant II (CVAAST)

Advanced Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

Program is also available online

This program provides comprehensive preparation for individuals who are currently employed as office assistants and who wish to advance their careers in office administration by upgrading their skills. Providing the knowledge and skills necessary for employment as a high-level administrative assistant or executive assistant in the public or private sector, this advanced certificate builds on skills developed in the Administrative Assistant I certificate program. In the Administrative Assistant II program, emphasis is placed on the expanding duties of an administrative assistant, and on the necessity of acquiring an in-depth knowledge of integrated software applications for the office. While mastering the technical knowledge essential for the office professional, students will also learn office management and organizational principles. Additionally, the program provides opportunities for skill enhancement in information processing, basic financial management, electronic presentations, and office administration. Upon completion of this program, the student will receive an advanced certificate as an administrative assistant.

Program Admission Requirements:
Completion of the Administrative Assistant I Certificate. Exceptions may be allowed upon consultation with a program advisor and evidence of relevant prior professional and/or academic experience.

Major/Area Requirements		(18 credits)
BOS 182	Database Software Applications	3
BOS 207	Presentation Software Applications	2
BOS 208	Desktop Publishing for the Office	3
BOS 230	Electronic Forms Design	3
BOS 250	Office Administration	4
BOS 284	Spreadsheet Software Applications II	3

Minimum Credits Required for the Program: **18**

Program Information Report

Business Office Administration (APBOAD)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

This program prepares students for higher-level support positions in office settings where increased responsibilities require technical skills in desktop publishing, presentation software, accounting, and database software. Students will also gain broader skills through completion of the general education courses required for an associate's degree.

Note: This program is not an AAMA Certification preparation program.

Articulation:
Eastern Michigan University, BS degree (applies to the Law Office Administration and Medical Administrative Assistant concentrations).

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Minimum Concentration Credits Required for the Program: 64
Complete one of the following concentrations: Administrative Assistant, Medical Administrative Assistant, Law Office Administration or Office Management.

The Law Office Administration (LAWA) concentration should not be regarded as a paralegal certification program and is intended solely for those students considering transferring into the undergraduate Bachelor of Science in Paralegal Studies at Eastern Michigan University. Interested students should consult the EMU-WCC articulation guide for information on course and program transferability.

Business Office Administration Concentrations

Administrative Assistant (ADMA)		(65 credits)
First Semester		**(14 credits)**
BOS 101C	Advanced Keyboarding	1
BOS 106	Electronic Planning, Sharing and Organization	3
BOS 206	Personal Management Application and Internet Resources	2
	Writing Elective(s)*	4
	Math Elective(s)	4
Second Semester		**(12 credits)**
ACC 100 or	Accounting Practices for Business	
ACC 111	Principles of Accounting I	3
BOS 157	Word Processing and Document Formatting I	3
BOS 184	Spreadsheet Software Applications I	3
	Arts/Human. Elective(s)	3
Third Semester		**(14 credits)**
BMG 155	Business on the Internet	3
BOS 207	Presentation Software Applications	2
BOS 257	Word Processing and Document Formatting II	3
BOS 284	Spreadsheet Software Applications II	3
	Speech Elective(s)**	3
Fourth Semester		**(12 credits)**
BMG 207	Business Communication	3
BOS 182	Database Software Applications	3
BOS 208	Desktop Publishing for the Office	3
	Nat. Sci. Elective(s)	3
Fifth Semester		**(13 credits)**
ACC 131	QuickBooks Software	3
BOS 230	Electronic Forms Design	3
BOS 250	Office Administration	4
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 65

Program Information Report

Law Office Administration (LAWA)		(65 credits)
First Semester		**(14 credits)**
BOS 101C	Advanced Keyboarding	1
BOS 106	Electronic Planning, Sharing and Organization	3
BOS 206	Personal Management Application and Internet Resources	2
	Math Elective(s)	4
	Writing Elective(s)*	4
Second Semester		**(12 credits)**
ACC 111	Principles of Accounting I	3
BOS 157	Word Processing and Document Formatting I	3
BOS 184	Spreadsheet Software Applications I	3
	Arts/Human. Elective(s)	3
Third Semester		**(14 credits)**
CJT 130	Introduction to Paralegal Studies	3
BOS 207	Presentation Software Applications	2
BOS 257	Word Processing and Document Formatting II	3
BOS 284	Spreadsheet Software Applications II	3
	Speech Elective(s)**	3
Fourth Semester		**(12 credits)**
BMG 111	Business Law I	3
BMG 155	Business on the Internet	3
BOS 182	Database Software Applications	3
	Nat. Sci. Elective(s)	3
Fifth Semester		**(13 credits)**
BMG 207	Business Communication	3
BOS 250	Office Administration	4
CJT 154	Everyday Law I: Law and Civil Liberties	3
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 65

Medical Administrative Assistant (MEDA)		(64 credits)
First Semester		**(14 credits)**
BOS 101C	Advanced Keyboarding	1
BOS 106	Electronic Planning, Sharing and Organization	3
BOS 206	Personal Management Application and Internet Resources	2
	Math Elective(s)	4
	Writing Elective(s)*	4
Second Semester		**(13 credits)**
BOS 157	Word Processing and Document Formatting I	3
BOS 184	Spreadsheet Software Applications I	3
HSC 124	Medical Terminology	3
BIO 109 or	Essentials of Human Anatomy and Physiology	
BIO 111	Anatomy and Physiology - Normal Structure and Function	4-5
Third Semester		**(14 credits)**
BOS 207	Presentation Software Applications	2
BOS 257	Word Processing and Document Formatting II	3
BOS 284	Spreadsheet Software Applications II	3
MBC 223	Medical Office Procedures	3
	Speech Elective(s)**	3
Fourth Semester		**(13 credits)**
	Arts/Human. Elective(s)	3
BMG 155	Business on the Internet	3
BMG 207	Business Communication	3
MBC 224	Medical Insurance and Reimbursement	4

Program Information Report

Fifth Semester		(10 credits)
BOS 182	Database Software Applications	3
PHL 244	Ethical and Legal Issues in Health Care	3
HSC 131	CPR/AED for the Professional Rescuer and First Aid	1
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 64

Office Management (OFMG) (67 credits)

First Semester		(14 credits)
BOS 101C	Advanced Keyboarding	1
BOS 106	Electronic Planning, Sharing and Organization	3
BOS 206	Personal Management Application and Internet Resources	2
	Math Elective(s)	4
	Writing Elective(s)*	4

Second Semester		(15 credits)
ACC 100	Accounting Practices for Business	3
BOS 157	Word Processing and Document Formatting I	3
BOS 184	Spreadsheet Software Applications I	3
BOS 230	Electronic Forms Design	3
	Arts/Human. Elective(s)	3

Third Semester		(13 credits)
ACC 110	Payroll Accounting	2
BMG 155	Business on the Internet	3
BOS 207	Presentation Software Applications	2
BOS 257	Word Processing and Document Formatting II	3
	Speech Elective(s)**	3

Fourth Semester		(12 credits)
BMG 200	Relationship Skills in the Workplace	3
BMG 207	Business Communication	3
BOS 182	Database Software Applications	3
	Nat. Sci. Elective(s)	3

Fifth Semester		(13 credits)
BMG 240	Human Resources Management	3
BMG 279	Performance Management	3
BOS 250	Office Administration	4
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 67

Minimum Credits Required for the Program: 64

Notes:

**ENG 111 is recommended.*
***COM 101 is recommended.*

Entrepreneurship

Learn how to recognize market opportunities and plan a small business through completion of this certificate program.

Program Information Report

Entrepreneurship and Innovation (CTENTI)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This certificate provides students with the ability to continuously learn and adapt the business knowledge, skills and attitudes needed to succeed in business, whether as an entrepreneur starting and operating a small business or as an entrepreneur within an organization. Students learn to recognize market opportunities within an industry, plan a business initiative to develop their big idea, and evaluate its profit potential. This certificate is appropriate for students who wish to be self-employed.

Major/Area Requirements		**(18 credits)**
BMG 101	Entrepreneurship I: Finding Your Opportunity	3
BMG 109	Entrepreneurship II: Starting Your Business	3
BMG 209	Entrepreneurship III - Running and Growing Your Business	3
Elective	Select 9 credits from any WCC business or occupational certificate program.	9

Minimum Credits Required for the Program: **18**

School of Child Care Professionals

If you yearn to be involved in nurturing the next generation of young people, the School of Child Care Professionals is the place to begin. Gain the knowledge and skills required for state licensing and national childcare credentials while enjoying the personal experience of working directly with children.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

After completing a certificate, students can progress to the next level, the advanced certificate. The credit hours required for these programs also vary. This type of certificate provides a more specialized level of skill development, and often allows students to upgrade their positions at their places of employment.

The next level, an Associate in Applied Science, is available for some programs. For some career fields, it is possible to earn a certificate, advanced certificate, and an Associate in Applied Science degree in the same field. In these cases, the credit hours from the certificate and advanced certificate can be applied to the credit hours needed for the Associate in Applied Science degree.

Child Care Professionals

Whether you are looking to care for children in a home-based center or a professional or school-based setting, these programs can prepare you for an entry-level position as a childcare professional.

Program Information Report

Child Development (CTCDA)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation

This Child Development Certificate is the first level in a three-tier training program. This program prepares students for the assessment exam required for the Child Development Associate (CDA) credential. It also prepares students for employment in child care centers or in family home daycare settings working with infants and toddlers, or preschoolers. Skills from the 13 functional areas required by the National Council for Early Childhood Professional Recognition are emphasized.

Program Admission Requirements:
Students must be at least 18 years of age and have a high school diploma or equivalent.

Major/Area Requirements		(10 credits)
CCP 122	Essentials of Early Care and Education - I	4
CCP 123	Essentials of Early Care and Education - II	4
CCP 132	Child Development Practicum I	1
CCP 133	Child Development Practicum II	1
	Optional (not required): CCP 124*	

Minimum Credits Required for the Program: **10**

Notes:

**This additional course is not required for the WCC Certificate, but may be taken to prepare for the final assessment test administered by the National Council and to complete the final observation assessment for the Child Development Associate credential.*

Program Information Report

Child Care and Education (CVCCE)

Advanced Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation

This certificate provides advanced training for child care professionals, and for paraprofessionals in school settings. It is the second level of a three-tier training program for adults who work with children under age 12. It is intended for students who are employed in a program that serves children under age 12 in a group setting.

Program Admission Requirements:
Students must have one of the following to enter this program: completion of a two-year vocational child care certificate; a CDA certificate; 12 credits in child care or elementary education; or concurrent enrollment in the Child Development Certificate program (CTCDA). Completion of the CTCDA is required before completing the Child Care and Education Advanced Certificate.

Students in the program are assumed to be employed in a program that serves children under age 12 in a group setting.

Major/Area Requirements		(25 credits)
CCP 101	Child Development	3
CCP 113	Health, Safety and Nutrition for Child Care	3
CCP 160	Foundations of Child Care and Early Education	3
CCP 209	Curriculum for Young Children	3
CCP 210	Child Guidance and Classroom Management	3
CIS 100	Introduction to Computer Productivity Apps	3
COM 101	Fundamentals of Speaking	3
ENG 111	Composition I	4

Minimum Credits Required for the Program: **25**

Program Information Report

Child Care Professional (APCCP)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation

Completion of the Child Care Professional Associate in Applied Science degree qualifies students to be a director or lead teacher at a child care center in the State of Michigan. The program is the last level in a three-tier training program for adults who work with children under twelve in group settings.

Articulation:
Ferris State University, BS degree;
Madonna University, BS degree;
Siena Heights, BA degree;
University of Michigan-Dearborn, BGS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Academic Reading and Writing Levels of 6 are required in the courses of this program.

Continuing Eligibility Requirements:
Students who wish to enroll in child care practicum courses: CCP 132 or CCP 133 must be employed a minimum of 8 hours for 15 weeks for each credit of practicum. Permission is required to enroll in any CCP practicum course. Permission can be granted only after the student has submitted a Work Place Learning Agreement, Student Agreement and an Employer Agreement.

First Semester		**(12 credits)**
CCP 122	Essentials of Early Care and Education - I	4
CCP 132	Child Development Practicum I	1
CIS 100	Introduction to Computer Productivity Apps	3
ENG 111	Composition I	4

Second Semester		**(14 credits)**
CCP 101	Child Development*	3
CCP 123	Essentials of Early Care and Education - II	4
CCP 133	Child Development Practicum II	1
COM 101	Fundamentals of Speaking	3
	Soc. Sci. Elective(s)**	3

Third Semester		**(13 credits)**
CCP 113	Health, Safety and Nutrition for Child Care	3
CCP 210	Child Guidance and Classroom Management	3
CCP 251	Education of the Young Child with Exceptionalities	3
MTH 148	Functional Math for Elementary Teachers I	4

Fourth Semester		**(12 credits)**
CCP 160	Foundations of Child Care and Early Education	3
CCP 200	Working with Families in a Diverse Society	3
CCP 209	Curriculum for Young Children	3
	Nat. Sci. Elective(s)***	3-4

Fifth Semester		**(9 credits)**
CCP 218	Advanced Child Care Seminar	1
CCP 219	Advanced Child Care Practicum	2
ENG 240 or	Children's Literature	
ENG 242	Multicultural Literature for Youth****	3
	Any 100-level or above course (suggested courses include CCP 211 or CCP 220)	3

Minimum Credits Required for the Program: 60

Notes:

**CCP 101 must be taken before or concurrently with any other CCP course.*

Program Information Report

***Students are encouraged to select PSY 100 or SOC 100 for their social science elective.*
****The following courses are recommended for the Natural Science Elective: AST 111, BIO 101, GLG 100, GLG 104, or SCI 101*
*****Transfer students should consider a course from the EMU Diverse World Requirement List*

Program Information Report

School of Construction Technology

Become part of the global community of skilled trades' professionals or skilled trades' managers. Design, plan, construct and complete structures for your home or for your career. You can earn a certificate or degree in Construction, Construction Management, Sustainable Building Practices or Heating, Ventilation and Air Conditioning. These programs offer the perfect blend of classroom education and hands-on training. At the Henry S. Landau Skilled Trades Center, you will be taught construction skills from the ground up. You can learn classic skills such as woodworking or modern techniques needed to maintain or improve your own structure. The HVAC program offers a wide range of training to equip high-end technicians with the knowledge and skills needed for successful entry into the field.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

After completing a certificate, students can progress to the next level, the advanced certificate. The credit hours required for these programs also vary. This type of certificate provides a more specialized level of skill development, and often allows students to upgrade their positions at their places of employment.

The next level, an Associate in Applied Science, is available for some programs. For some career fields, it is possible to earn a certificate, an advanced certificate, and an Associate in Applied Science degree in the same field. In these cases, the credit hours from the certificate and advanced certificate can be applied to the credit hours needed for the Associate in Applied Science degree.

Alternatively, students can earn an AAS in Occupational Studies by completing a certificate, an advanced certificate (if one exists) and General Education requirements.

Construction

If you want to learn basic construction, prepare to take the Michigan Builder's License exam or are considering starting a construction business, this is the place to start.

Program Information Report

Construction Technology I (CTCON1)

Certificate

Program Effective Term: Fall 2017

This program prepares students for entry-level jobs in a broad range of careers in the construction industry, where they need an understanding of building systems, the safe use of tools and equipment, materials, and the vocabulary of the field.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Major/Area Requirements		(17 credits)
CON 104	Construction Framing I	3
CON 105	Construction Framing II	3
CON 108	Introduction to Construction Technology	2
CON 204	Construction Finishes - Interior	3
CON 205	Construction Finishes - Exterior	3
CON 255	Construction Concrete and Masonry	3

Minimum Credits Required for the Program: 17

Program Information Report

Facility and Energy Management (CTFEM)

Certificate

Program Effective Term: **Fall 2017**

In this program, students will develop the knowledge needed to understand and manage the energy usage of commercial and residential buildings and properties. With a foundation in facilities management, students will focus on principles of energy management, renewable energy and sustainability. Students will be introduced to areas that constitute the main consumers of energy, HVAC, plumbing and electrical. Strategies to evaluate energy consumption and recommended improvements will be covered.

Continuing Eligibility Requirements:
Students must earn a "C" or better in all courses.

Major/Area Requirements		(18 credits)
CON 235	Construction - Building Codes and Prints	3
ELE 106	Renewable Energy Technology	3
FMA 130	Introduction to Facility and Energy Management	3
FMA 150	Energy Management Principles	3
FMA 170	Building Sustainability LEED	3
FMA 190	Introduction to Mechanical, Plumbing and Electrical	3

Minimum Credits Required for the Program: **18**

Program Information Report

Ironworkers Pre-Apprenticeship (CTPAIW)

Certificate

Program Effective Term: Fall 2017

In this certificate program, students will be introduced to the necessary skills needed to be a Union Ironworker across the United States and Canada. Training includes print reading, safety and welding processes used by the Union Ironworker trades. Students who successfully complete the program will be eligible for advanced standing in the Ironworker Local Union Apprenticeship Training Program.

Continuing Eligibility Requirements:
All courses must be completed with a C or better.

Major/Area Requirements		(24 credits)
	CMG 115 Safety and Employability Skills	3
CMG 145	Construction Plan Reading for the Trade	3
CON 106	Contextualized Math for the Trades	3
CON 193	Tools, Equipment and Material Handling for the Trade	3
WAF 115	Oxy-Fuel Gas Cutting and Welding for Ironworkers	4
WAF 116	Shielded Metal Arc Welding for Ironworkers	4
WAF 117	Flux Cored Arc Welding for Ironworkers	4
Minimum Credits Required for the Program:		**24**

Program Information Report

Sustainable Building Practices (CTSBP)

Certificate

Program Effective Term: Fall 2017

In this program, students will be introduced to the theory of building sustainability. Through review of the history of the green movement, students will develop an understanding of why it has become a critical part of our way of life. Following an overview of the impact of non-sustainable practices on the planet, students will be introduced to both clean energy practices and the Building Performance Institute's requirement for procedures used in building weatherization. Students will apply theory and skills to projects in the lab and off-site environments.

Program Admission Requirements:
Students must have an Academic Math Level of 3.

Major/Area Requirements		(18 credits)
CON 180	Introduction to Green Building	3
CON 247	Sustainable Building Practices	4
ELE 106	Renewable Energy Technology	3
ENV 101	Environmental Science I	4
HVA 201	Energy Audits*	4
Minimum Credits Required for the Program:		**18**

Notes:

**Students in this program will be given prerequisite overrides for HVA 201.*

Program Information Report

Cabinetmaking/Millwork Technology (CVCMT)

Advanced Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation**

This program is designed to develop skills and knowledge needed for positions such as trim carpenters, cabinetmakers, furniture makers and repair technicians. Students will develop skills related to the design, fabrication, and installation of interior cabinetry and trim systems for commercial and residential applications.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Students must complete the Construction Technology I Certificate for entry into this program.

Major/Area Requirements		**(17 credits)**
CON 108	Introduction to Construction Technology	2
CON 170	Cabinetry and Millwork I	3
CON 173	Cabinetry and Millwork II	3
CON 175	Cabinetry and Millwork III	3
CON 250	Cabinet Shop Management and Fundamentals	3
CON 275	Cabinetry and Millwork IV	3

Minimum Credits Required for the Program: **17**

Program Information Report

Construction Technology II (CVCON2)

Advanced Certificate

Program Effective Term: Fall 2017

This advanced certificate prepares students for specific careers in construction. The program will prepare students to take the State of Michigan Builder's License exam, create contracts for construction projects, and gain necessary techniques for specific contractors. Students preparing for the State of Michigan builder's license exam will also need CMG 130.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Completion of the Construction Technology I Certificate or two years experience in the construction industry is required for entry into this program.

Major/Area Requirements		(18 credits)
CON 220	Construction Licensing, Contracts, and Start Up	3
CON 230	Construction Production	3
CON 235	Construction - Building Codes and Prints	3
CON 240	Construction - Advanced Finishes and Techniques	3
CON 260	Construction Remodeling	3
CON 270	Construction Mechanicals	3

Minimum Credits Required for the Program: 18

Program Information Report

Construction Technology (ASCT)

Associate in Science Degree

Program Effective Term: Fall 2017

The Residential Construction program teaches students how to build a home from the ground up. The program offers a balance of classroom theory and hands on training. Students will also learn how to start up their own construction business.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

First Semester		(15 credits)
CON 104	Construction Framing I	3
CON 108	Introduction to Construction Technology	2
ENG 111	Composition I	4
MTH 178	General Trigonometry	3
	Arts/Human. Elective(s)*	3

Second Semester		(15 credits)
CMG 130	Construction Site Safety and OSHA Regulations	3
CON 105	Construction Framing II	3
ENG 226	Composition II	3
PLS 112	Introduction to American Government	3
	Computer Lit. Elective(s)	3

Third Semester		(16 credits)
CON 204	Construction Finishes - Interior	3
CON 205	Construction Finishes - Exterior	3
PHY 105	Conceptual Physics	4
	Arts/Human. Elective(s)*	3
	Speech Elective(s)	3

Fourth Semester		(15 credits)
CON 220	Construction Licensing, Contracts, and Start Up	3
CON 230	Construction Production	3
CON 255	Construction Concrete and Masonry	3
	Arts/Human. Elective(s)*	3
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Program: 61

Notes:

**SPN 111 is strongly recommended as one of the Arts/Humanities electives.*

Construction Management

Prepare for work in the construction management or property maintenance industries through the completion of these programs.

Program Information Report

Construction Management (AACMG)

Associate in Arts Degree

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This program prepares students for entry-level jobs in the construction industry as well as for transfer to a bachelor's degree program in construction management at a four-year college or university. Students who transfer will continue developing the skills needed to work for construction contractors, engineering/architectural firms, public agencies, or trade associations in positions such as office engineer, field engineer, safety engineer, project engineer, foreman, estimator, scheduler, expeditor, quality control engineer, inspector, material representative or independent contractor. The program transfers to Eastern Michigan University. In addition to the required courses within the degree program, students may transfer additional courses taken at WCC that will be applied to technical, business and math/science requirements for the bachelor's degree program at Eastern Michigan University.

Articulation:
Eastern Michigan University, several BS degrees.

This program meets MACRAO. Students must have their transcripts certified for MACRAO completion by the WCC Student Records Office.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Students must have an Academic Math Level of 4 to enroll in CMG 150. Two years of high school algebra is recommended.

First Semester		**(14 credits)**
CIS 100	Introduction to Computer Productivity Apps	3
CMG 150	Introduction to Construction Management	3
ENG 111	Composition I	4
MTH 160	Basic Statistics*	4

Second Semester		**(15 credits)**
ACC 111	Principles of Accounting I	3
CMG 130	Construction Site Safety and OSHA Regulations	3
ENG 226	Composition II	3
MTH 178	General Trigonometry	3
	Arts/Human. 1 Elective(s)	3

Third Semester		**(15 credits)**
BMG 240	Human Resources Management	3
CMG 180	Application of Construction Materials	3
ECO 211	Principles of Economics I**	3
	Soc. Sci. 1 Elective(s)**	3
	Speech Elective(s)***	3

Fourth Semester		**(16 credits)**
BMG 207	Business Communication	3
CMG 170	Construction Graphics	3
GLG 114	Physical Geology	4
	Arts/Human. 2 Elective(s)	3
	Soc. Sci. 2 Elective(s)**	3

Fifth Semester		**(6 credits)**
BMG 111	Business Law I	3
CMG 200	Construction Systems	3

Minimum Credits Required for the Program: **66**

Notes:

**MTH 160 should be completed at WCC to satisfy EMU's Quantitative Reasoning Requirement. If completed at EMU, MATH 110 will be required unless waived by ACT/SAT or math placement score.*
***ECO 211 meets the social science requirement. Students may select one additional course in ECO and a second course in another*

discipline to meet the MACRAO social science requirement.
****Choose any COM course that meets General Education Requirements.*

Students transferring to EMU should see the articulation agreement for additional courses that can be taken at WCC.

Engineering Technology

Learn the skills needed to help design and produce products of the future.

Program Information Report

Engineering and Design Technology (CTEDT)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

The Engineering Design Technology program prepares students to create and design products using engineering software and production methods used in today's growing global economy. Students will be introduced to product design processes and engineering and design technology concepts. Using various software tools, students will experiment with design concepts as a mean to developing unique products for the construction, automotive or other production industries. Hands-on experience with design-appropriate materials will round out the development process.

Continuing Eligibility Requirements:
Students must earn a "C" or better in all courses.

Major/Area Requirements		**(19 credits)**
CMG 125	Introduction to Engineering Design Technology	4
EGT 100	Introduction to Product Design	3
EGT 125	Advanced Engineering Design Technology	3
EGT 150	Engineering Design Technology Material Science	3
EGT 175	Engineering Design Technology Material Processing	3
	Restricted Elective: art, manufacturing, welding, woodworking or other department approved course.	3-4

Minimum Credits Required for the Program: **19**

HVAC

Whether you are working on residential or commercial equipment these programs prepare you for a career in the Heating, Ventilation, Air Conditioning and Refrigeration Industry.

Program Information Report

Heating, Ventilation, Air Conditioning, and Refrigeration - Residential (CTHVRR)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This program prepares students for entry-level jobs in HVAC contracting companies, HVAC servicing companies, hospitals, schools and other public institutions, and apprenticeships in large manufacturing plants and supply houses. In these commercial, residential, or institutional settings students combine their diagnostic and repair skills with customer relations skills to service heating, ventilation, and air conditioning equipment. This program also helps prepare students for the third class refrigeration licensure examination.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Required Courses		(25 credits)
HVA 101	Heating, Ventilation and Air Conditioning I	4
HVA 102	HVAC Sheet Metal Fabrication	4
HVA 103	Heating, Ventilation and Air Conditioning II	4
HVA 105	Residential and Light Commercial Heating Systems	4
HVA 107	Residential and Light Commercial Air Conditioning Systems	4
HVA 108	Residential HVAC Competency Exams and Codes	3
WAF 104	Soldering and Brazing	2

Minimum Credits Required for the Program: **25**

Program Information Report

Heating, Ventilation, Air Conditioning and Refrigeration - Commercial Trade (CVHVCT)

Advanced Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This program is a capstone to HVAC-Residential Certification, and is designed for students who wish to develop skills in HVACR mechanics or installation. It prepares the student for industry-recognized certification (C/IS) for entry-level employment in commercial heating, ventilation and air conditioning. Additional theory and hands-on experience will increase students' knowledge base concerning HVACR systems at the commercial level. The student will develop knowledge and skills in sizing, layout, installation, maintenance, and troubleshooting HVACR equipment.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Students must complete the Heating, Ventilation, Air Conditioning, and Refrigeration Residential Certificate (CTHVRR).

Major/Area Requirements		**(10 credits)**
HVA 203	Refrigeration Systems	3
HVA 205	Hydronic Systems	4
HVA 207	Commercial Industry Standards with Competency Exams	3

Core Courses		**(7 credits)**
HVA 201	Energy Audits	4
HVA 202	Air System Layout and Design	3

Minimum Credits Required for the Program: **17**

Program Information Report

Heating, Ventilation, Air Conditioning and Refrigeration (APHVCR)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

This program is a capstone to the Heating, Ventilation, Air Conditioning and Refrigeration - Commercial Trade Advanced Certificate. It provides a rigorous heating, ventilation, air-conditioning and refrigeration (HVACR) background with solid preparation for entry-level management positions or transfer to four-year programs offering bachelor degrees in HVACR, technology management, and other technically oriented fields. This program also provides opportunities to obtain advanced certifications which are recognized throughout the heating, ventilation and air-conditioning industry.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

First Semester		**(15 credits)**
HVA 101	Heating, Ventilation and Air Conditioning I	4
HVA 102	HVAC Sheet Metal Fabrication	4
HVA 103	Heating, Ventilation and Air Conditioning II	4
	Math Elective(s)	3-4

Second Semester		**(13 credits)**
HVA 105	Residential and Light Commercial Heating Systems	4
HVA 107	Residential and Light Commercial Air Conditioning Systems	4
HVA 202	Air System Layout and Design	3
WAF 104	Soldering and Brazing	2

Third Semester		**(9 credits)**
HVA 108	Residential HVAC Competency Exams and Codes	3
	Computer Lit. Elective(s)	3
	Arts/Human. Elective(s)	3

Fourth Semester		**(14 credits)**
HVA 201	Energy Audits	4
HVA 203	Refrigeration Systems	3
HVA 205	Hydronic Systems	4
	Nat. Sci. Elective(s)	3-4

Fifth Semester		**(12 credits)**
HVA 207	Commercial Industry Standards with Competency Exams	3
	Writing Elective(s)	3-4
	Speech Elective(s)	3
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Program: 63

Welding and Fabrication

Learn skills from beginning welding to advanced fabrication to help prepare for an entry-level career as welder, fabricator or field technician.

Program Information Report

Welding and Fabrication Principles (CTWLDS)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Wage Occupation**

This certificate introduces students to safe welding and cutting practices and principles including, proper technique and position, weld quality requirements, destructive and non-destructive testing and examination methods, print reading and interpretation of welding symbols as well as basic metal fabrication. Students will use the foundation and working knowledge to weld in all processes, perform repair techniques using thermal cutting and gouging, apply the requirements to executive quality welds and apply CNC programming language that can be used to produce parts that can be assembled and welded. This certificate serves as a fundamental pathway into the Welding and Fabrication Advanced Applications certificate and Welding Technology degree. Students who successfully complete this certificate will have learned the skills sought by the workforce as an entry-level welder and fabricator.

Articulation:
Eastern Michigan University, several BS degress.

Copies can be obtained from the Counseling Office, a program advisor or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Requirements		(24 credits)
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
WAF 106	Welding Print Reading	3
WAF 109	Welding Safety and OSHA Regulations	2
WAF 125	Introduction to Welding Processes I	2
WAF 126	Introduction to Welding Processes II	2
WAF 130	Shielded Metal Arc Welding (SMAW)	4
WAF 131	Thermal Cutting, Gouging and Weld Repair	3
WAF 139	Basic Metal Fabrication	3
WAF 140	Inspection and Testing	3

Minimum Credits Required for the Program: **24**

Program Information Report

Welding and Fabrication Advanced Applications (CVWLDN)

Advanced Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Wage Occupation**

This advanced certificate combines welding fundamentals with more complex welding, cutting and fabrication techniques and applications aimed to further develop one's skills and core competencies. Students focus on welding using processes and positions common in industry, perform destructive and non-destructive testing, identify weld failures and perform root cause analysis, executive repair techniques, perform advanced fabrication techniques and execute automated welding and cutting programming and operations. Students who successfully complete this advanced certificate will have learned a broad range of essential skillsets critical to the trade and how to apply those skills to manufacturing, automotive, construction, aerospace, oil, military industry, gas and power industries.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Successful completion of the Welding and Fabrication Principles Certificate (CTWLDS).

Continuing Eligibility Requirements:
WAF 233 and WAF 239 require a Math Level 2.

Major/Area Requirements		(24 credits)
WAF 150	Automated Welding and Cutting	3
WAF 210	Welding Metallurgy	3
WAF 230	Advanced Shielded Metal Arc Welding (SMAW)	4
WAF 231	Gas Tungsten Arc Welding (GTAW)	4
WAF 232	Semi-Automatic Welding Processes	4
WAF 233	Submerged Arc and Flux Core Arc Welding	3
WAF 239	Advanced Metal Fabrication	3
Minimum Credits Required for the Program:		**24**

Program Information Report

Welding Technology (APWLDF)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Wage Occupation

The Welding Technology program offers specialized welding and fabrication instruction through theoretical, practical and technical learning objectives and strategies. The core curriculum specializes in welding and fabrication and delves into the expanses of welding technology as a whole. Students are first introduced to welding, cutting and fabrication safety; theory and fundamentals; and then transition to more advanced welding and fabrication processes and application, such as weld quality, inspection testing and repair techniques and automated welding and cutting systems and operations. Students who successfully complete this program will have learned a diverse skillset giving them opportunities to enter the workforce as entry-level welders, fabricators, field technicians and positions them for higher learning in welding engineering, welding education or materials science.

Articulation:
Eastern Michigan University, several BS degrees;
Pennsylvania College of Technology, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

First Semester		**(14 credits)**
Elective	Math Elective(s)	3-4
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
WAF 106	Welding Print Reading	3
WAF 109	Welding Safety and OSHA Regulations	2
WAF 125	Introduction to Welding Processes I	2
WAF 126	Introduction to Welding Processes II	2

Second Semester		**(16 credits)**
Elective	Computer Elective(s)	3
WAF 130	Shielded Metal Arc Welding (SMAW)	4
WAF 131	Thermal Cutting, Gouging and Weld Repair	3
WAF 139	Basic Metal Fabrication	3
WAF 140	Inspection and Testing	3

Third Semester		**(15 credits)**
Elective	Writing Elective(s)	3-4
WAF 230	Advanced Shielded Metal Arc Welding (SMAW)	4
WAF 231	Gas Tungsten Arc Welding (GTAW)	4
WAF 232	Semi-Automatic Welding Processes	4

Fourth Semester		**(12 credits)**
Elective	Speech Elective(s)	3
WAF 150	Automated Welding and Cutting	3
WAF 210	Welding Metallurgy	3
WAF 233	Submerged Arc and Flux Core Arc Welding	3

Fifth Semester		**(12 credits)**
Elective	Arts/Human. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3-4
Elective	Soc. Sci. Elective(s)	3
WAF 239	Advanced Metal Fabrication	3

Minimum Credits Required for the Program: 69

School of Criminal Justice and Law Enforcement

These programs help students develop the skills and knowledge necessary for work in law enforcement and criminal justice. Completion of the Police Academy Certificate prepares the student to meet the Michigan Commission on Law Enforcement Standards (MCOLES) necessary for a career as a police officer. Students preparing for employment in occupations that do not require completion of the MCOLES/Police Academy, or that do require a four-year degree (such as most Federal employment) can begin their studies by obtaining a Criminal Justice Associate of Arts degree, which is transferrable to most baccalaureate programs. This degree is described in the Transfer and University Parallel Programs section of the catalog.

Criminal Justice and Law Enforcement

Considering a career in law enforcement or corrections? These programs help prepare you for further study in these specialized fields.

Police Academy (CTPA)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

The successful completion of this program is mandatory for anyone seeking law enforcement licensing in the State of Michigan. The Michigan Commission on Law Enforcement Standards (MCOLES) and the WCC Police Academy Advisory Committee have created the course content. The WCC Student Handbook, the MCOLES Policy and Procedure Manual, and the WCC Police Academy Daily Rules and Regulations will govern student conduct. The police academy is structured as an adult learning experience, and will require significant self-discipline on the part of the student. Teamwork is required. Just as sworn law enforcement officers operate under a code of honor which requires them to be above reproach in ethics and behavior, students will also be held to this same standard. MCOLES pre-enrollment is a corequisite of this course. Prospective students should review the "Selection and Employment Standards for Michigan Law Enforcement Officers" on the MCOLES Web site: http://mi.gov/mcoles

Applying for Admission to the Program:
Students must have a minimum of 45 college credits prior to admission to the Police Academy. Students are admitted to the program based on the priorities established by the Michigan Commission on Law Enforcement Standards (MCOLES).

Major/Area Requirements		(19 credits)
CJT 229A	Law Enforcement Training Part I	12
CJT 229B	Law Enforcement Training Part II	7

Minimum Credits Required for the Program: **19**

Program Information Report

Criminal Justice - Law Enforcement (APCJLE)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

This program prepares students for certification to work in law enforcement jobs in the State of Michigan. Students must complete the academic program prior to entering the Police Academy component of the program.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Continuing Eligibility Requirements:
-Admission to the Police Academy component of this program (CJT 229A and CJT 229B) is based on passing reading, writing, and physical activity examinations as well as fingerprinting and criminal history checks. Students are admitted to the program based on the priorities established by the Michigan Commission on Law Enforcement Standards (MCOLES).
-Students who do not enter the academy may complete the Criminal Justice Associate in Arts Degree instead of the Criminal Justice Law Enforcement Associate in Applied Science Degree, and will not be certified for employment.
-Students admitted to the Police Academy are required to purchase gym clothes, khaki uniforms, textbooks, and other supplies.
-Academy students are required to adhere to additional rules of behavior and discipline beyond the general code of conduct.

First Semester		(14.5 credits)
CJT 100	Introduction to Criminal Justice	3
ENG 100 or	Introduction to Technical and Workplace Writing	
ENG 111	Composition I	4
MTH 160 or	Basic Statistics	
MTH 169	Intermediate Algebra	4
PEA 115	Health and Fitness Experience	.5
Elective	Computer Lit. Elective(s)	3

Second Semester		(15 credits)
CJT 111	Police/Community Relations	3
CJT 120	Criminal Justice Ethics	3
CJT 160	Criminal Justice Constitutional Law	3
COM 102	Interpersonal Communication	3
	Nat. Sci. Elective(s)	3

Third Semester		(15.5 credits)
CJT 170	Domestic and International Terrorism	3
CJT 224	Criminal Investigation	3
ANT 265	Introduction to Forensic Anthropology	3
PEA 115	Health and Fitness Experience	.5
PSY 100 or	Introduction to Psychology	
PSY 200	Child Psychology	3
	Arts/Human. Elective(s)	3

Fourth Semester		(19 credits)
CJT 229A	Law Enforcement Training Part I	12
CJT 229B	Law Enforcement Training Part II	7

Minimum Credits Required for the Program: 64

Notes:

It is recommended that students take one or two semesters of Spanish in addition to program requirements.

Program Information Report

Criminal Justice (AACJ)

Associate in Arts Degree

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This program helps prepare students for jobs in the courts and in corrections (such as probation and parole) as well as state and federal law enforcement. Most, but not all, of these jobs require at least a bachelor's degree and students can complete their first 3 years at WCC before transferring to other four-year schools such as EMU for their final year.

Articulation:
Davenport University, Bachelor degree;
Eastern Michigan University, BA degree and several BS degrees*;
Kaplan University, BS degree;
Madonna University, BS degree.

*For those interested in pursuing a degree in Criminology and Criminal Justice from EMU, students may take 30 additional credit hours at WCC and transfer a total of 94 credits to EMU towards a Bachelor's Degree (124 hours). The following additional classes are recommended: ANT 201, SOC 207, SOC 250, and PSY 257.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Students must have an Academic Math Level of 3 to enroll in MTH 160. One year of high school algebra is recommended.

First Semester		**(16 credits)**
CJT 100	Introduction to Criminal Justice	3
CJT 111 or	Police/Community Relations	
CJT 154 or	Everyday Law I: Law and Civil Liberties	
CJT 155	Everyday Law II: Civil Law, Liabilities and You	3
COM 102	Interpersonal Communication	3
ENG 111	Composition I	4
Elective	Arts/Human. Elective(s)*	3

Second Semester		**(16 credits)**
CJT 120	Criminal Justice Ethics	3
CJT 160	Criminal Justice Constitutional Law	3
CJT 209	Criminal Law	3
ENG 226	Composition II	3
MTH 160	Basic Statistics	4

Third Semester		**(16 credits)**
CJT 208	Criminal Evidence and Procedure	3
CJT 223	Juvenile Justice	3
PSY 100	Introduction to Psychology	3
Elective	Nat. Sci. Elective(s) with lab*	4
Elective	Computer Lit. Elective(s)	3

Fourth Semester		**(18 credits)**
ANT 201	Introduction to Cultural Anthropology	3
CJT 224	Criminal Investigation	3
CJT 170 or	Domestic and International Terrorism	
CJT 225	Seminar in Criminal Justice	3
SOC 100	Principles of Sociology	3
Elective	Arts/Human. Elective(s)*	3
Elective	Nat. Sci. Elective(s) from a different discipline*	3-4

Minimum Credits Required for the Program: **66**

Notes:

**See the Michigan Transfer Agreement (MTA) list to make course selections. Students who follow this program will have to do MTA or they can follow an earlier catalog.*

Program Information Report

Paralegal Studies/Pre-Law (AAPSPL)

Associate in Arts Degree

Program Effective Term: Fall 2017

This program prepares students for entry-level positions or further study in the field of law. Entry-level paralegal positions are available in legal offices such as corporate, prosecuting and public defense in addition to some courts. Under the supervision of an attorney, paralegals may assist with research, court filings, documentation and depositions. Students who wish to continue their education may continue on to a bachelor's degree or a Juris Doctorate degree.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

First Semester		(16 credits)
CJT 130	Introduction to Paralegal Studies	3
CJT 154	Everyday Law I: Law and Civil Liberties	3
COM 102	Interpersonal Communication	3
ENG 111	Composition I	4
PHL 123	Critical Thinking	3

Second Semester		(15 credits)
BOS 206	Personal Management Application and Internet Resources	2
CJT 120	Criminal Justice Ethics	3
ENG 226	Composition II	3
MTH 160	Basic Statistics	4
SOC 100	Principles of Sociology	3

Third Semester		(16 credits)
ACC 111	Principles of Accounting I	3
CJT 208	Criminal Evidence and Procedure	3
HST 200	Michigan History	3
	Nat. Sci. Elective(s)*	4
	Computer Lit. Elective(s)	3

Fourth Semester		(15 credits)
BMG 111	Business Law I	3
CJT 155	Everyday Law II: Civil Law, Liabilities and You	3
CJT 209	Criminal Law	3
MUS 147	Arts, Media and Entertainment Law	3
PHL 250	Logic	3

Minimum Credits Required for the Program: 62

Notes:

**Students wishing to transfer to EMU should follow the articulation guide.*

***Students are encouraged to complete the MACRAO or MTA requirement noted below:*
Students who wish to complete MACRAO should select another social science course.
Students who wish to complete MTA should select another natural science course.

School of Culinary Arts and Hospitality Management

Find your passion in food, friends and elegant surroundings. Develop skills for an entry-level position in restaurant, hospitality or institutional settings. Whether your interests lie in pastry and wedding cakes, food preparation and marketing, or management of food service, these are the programs for you.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

The next level, an Associate in Applied Science, is available for some programs. For some career fields, it is possible to earn a certificate and an Associate in Applied Science degree in the same field. In these cases, the credit hours from the certificate can be applied to the credit hours needed for the Associate in Applied Science degree.

Culinary Arts and Hospitality Management

Develop the skills necessary for a career in the hospitality industry.

Baking and Pastry (CTBAKP)

Certificate

Program Effective Term: **Fall 2017**

High Skill Occupation

This program prepares students for careers in commercial baking, where they will work in retail deli-bakeries, country clubs, resorts, hotels, and institutional food service operations. Courses can be applied toward the Associate in Applied Science Degree in Culinary and Hospitality Management.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Major/Area Requirements		(25 credits)
CUL 100	Introduction to Food Service and Hospitality Industry	2
CUL 104	Baking Science	2
CUL 110	Sanitation and Hygiene*	2
CUL 114	Fundamentals of Baking	3
CUL 115	Fundamentals of Pastry	3
CUL 116	Fundamental Culinary Principles	3
CUL 118	Principles of Nutrition	3
CUL 132	Basic Cake and Wedding Cake Design	2
CUL 140	Bakery Management and Merchandising	2
CUL 224	Principles of Cost Control	3

Minimum Credits Required for the Program: **25**

Notes:

**CUL 110 must be taken as a pre- or co-requisite with any of the lab classes: CUL 114, CUL 115, CUL 132, CUL 140.*

Program Information Report

Culinary Arts (CFCULC)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation**

This program prepares students for a position as a food production specialist in a hotel, restaurant, or institution, where sauteing, roasting, broiling, baking, vegetable preparation, producing soups and sauces, food storage, and sanitation will be among the skills they will use. The program also gives students a foundation for continued study toward an Associate in Applied Science in Culinary and Hospitality Management.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Major/Area Requirements		(33 credits)
CUL 100	Introduction to Food Service and Hospitality Industry	2
CUL 104	Baking Science	2
CUL 110	Sanitation and Hygiene*	2
CUL 114	Fundamentals of Baking	3
CUL 116	Fundamental Culinary Principles	3
CUL 118	Principles of Nutrition	3
CUL 120	Classical Kitchen Operations	3
CUL 121	Modern Kitchen Operations	3
CUL 145	Introduction to Dining Room Protocol	3
CUL 150	Food Service Management and Supervision	3
CUL 210	Advanced Kitchen Operations: Garde Manger**	3
CUL 224	Principles of Cost Control	3

Minimum Credits Required for the Program: **33**

Notes:

**CUL 110 must be taken as a pre- or co-requisite with any of the lab classes: CUL 114, CUL 120, CUL 121.*
***CUL 210 is offered in spring semesters only.*

Program Information Report

Baking and Pastry Arts (APBPA)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

Baking and Pastry Arts is a program that offers a focused hands-on professional approach to the art of baking and pastry, and will allow students to gain the necessary practical knowledge, theory and skill to become a successful and marketable pastry professional. This program prepares students for careers in pastry shops, restaurants, country clubs, hotels, catering facilities, institutional food service, as well as entrepreneurship.

First Semester		(14 credits)
CUL 110	Sanitation and Hygiene	2
Elective	Choose one elective from the following: BMG 273, CUL 226, a 100 level ART course.	3
	Arts/Human. Elective(s)	3
	Math Elective(s)	3
	Speech Elective(s)	3

Second Semester		(15 credits)
CUL 100	Introduction to Food Service and Hospitality Industry	2
CUL 104	Baking Science	2
CUL 116	Fundamental Culinary Principles	3
CUL 118	Principles of Nutrition	3
CUL 132	Basic Cake and Wedding Cake Design	2
	Computer Lit. Elective(s)	3

Third Semester		(17 credits)
CUL 114	Fundamentals of Baking	3
CUL 115	Fundamentals of Pastry	3
CUL 215	Advanced Cake Decorating	2
CUL 224	Principles of Cost Control	3
	Nat. Sci. Elective(s)	3
	Writing Elective(s)	3

Fourth Semester		(15 credits)
BMG 101	Entrepreneurship I: Finding Your Opportunity	3
CUL 140	Bakery Management and Merchandising	2
CUL 205	Pastry Arts and Design	3
CUL 211	Advanced Bread Production	4
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Program: 61

Program Information Report

Culinary and Hospitality Management (APCULD)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

This program prepares students for a career as a professional culinarian in a restaurant, hospitality, or institutional setting. Culinary Arts professionals have a variety of responsibilities that may include supervising and coordinating the activities of food service workers or dining room employees, planning menus, estimating daily or weekly needs, ordering and maintaining inventories of supplies and equipment, and keeping records of meals served. The program also provides a foundation for continued culinary arts studies at a four-year college and for chef certification through the American Culinary Federation (ACF).

Articulation:
The Art Institute of Michigan, Bachelor degree;
Eastern Michigan University, several BS degrees;
Madonna University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

First Semester		(16 credits)
CUL 100	Introduction to Food Service and Hospitality Industry	2
CUL 110	Sanitation and Hygiene*	2
CUL 116	Fundamental Culinary Principles	3
CUL 145	Introduction to Dining Room Protocol	3
	Math Elective(s)	3-4
	Computer Lit. Elective(s)	3

Second Semester		(17 credits)
CUL 104	Baking Science	2
CUL 118	Principles of Nutrition	3
CUL 120	Classical Kitchen Operations	3
CUL 121	Modern Kitchen Operations	3
	Speech Elective(s)	3
	Writing Elective(s)	3

Third Semester		(16 credits)
CUL 114	Fundamentals of Baking	3
CUL 210	Advanced Kitchen Operations: Garde Manger	3
CUL 224	Principles of Cost Control	3
CUL 226	Advanced Dining Room and Beverage Management	4
	Nat. Sci. Elective(s)	3

Fourth Semester		(18 credits)
CUL 115	Fundamentals of Pastry	3
CUL 150	Food Service Management and Supervision	3
CUL 230	Advanced Kitchen Operations: American Regional	3
CUL 231	Advanced Kitchen Operations: Global Cuisine	3
	Arts/Human. Elective(s)	3
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Program: 67

Notes:

**CUL 110 must be taken prior or concurrently with any of the following lab classes: CUL 114, CUL 115, CUL 120, CUL 121.*

Program Information Report

School of Digital Media Arts

Creativity abounds in the School of Digital Media Arts which encompasses the disciplines of animation, graphic design, web design and development, photography and digital video. The programs in Digital Media Arts introduce students to foundational skills in these disciplines and prepare them for creative jobs.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

The next level, an Associate Degree, is available for some programs. Credit hours from the certificate can be applied to the credit hours needed for the Associate Degree.

3D Animation

Learn the basics of three-dimensional animation used in videos, games and on the Web. This degree will help prepare you for an entry-level position in digital modeling and animation.

3D Animation (CTANI)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

The 3D Animation Certificate prepares students with fundamental skills for entry-level positions in the digital 3D modeling and animation industry and is a stepping stone to the Associate Degree in 3D Animation. Foundation areas of study include visual perception of 3D form and shape, volume/weight, surface mapping and lighting, basic 3D animation and motion graphic composition.

Major/Area Requirements		**(27 credits)**
ANI 145	Concept Development for Animation	2
ANI 150	3D Animation I: Modeling	4
ANI 155	Textures and Studio Lighting for Animation	4
ANI 160	Fundamentals of Movement and Animation	4
ANI 230	Motion and Sound	2
ANI 250	3D Animation II	4
ANI 260	3D Animation III	4
GDT 108	Photoshop Graphics	3

Minimum Credits Required for the Program: **27**

Program Information Report

3D Animation (APANIM)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

The Digital Animation program prepares students for entry-level positions in digital 3D modeling and animation for use in video, CD-ROM and DVD presentations, broadcast graphics, video game design, kiosks, print (still views), and the Web. Emphasis is on visual perception of 3D form and shape, volume/weight, surface mapping and lighting, basic 3D animation and motion graphic composition for video and internet ready applications.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Good computer skills and aptitude are required to enroll in computer-based courses. Courses are taught using Macintosh computers.

First Semester		(16 credits)
ANI 145	Concept Development for Animation	2
ANI 150	3D Animation I: Modeling	4
ART 111	Basic Drawing I	4
COM 101	Fundamentals of Speaking	3
	Math Elective(s)	3-4

Second Semester		(15 credits)
ANI 155	Textures and Studio Lighting for Animation	4
ANI 160	Fundamentals of Movement and Animation	4
ART 127	Life Drawing I	4
GDT 108	Photoshop Graphics	3

Third Semester		(10 credits)
ANI 235	Introduction to Compositing and Visual Effects	4
	Computer Lit. Elective(s)	3
	Arts/Human. Elective(s)	3

Fourth Semester		(12 credits)
ANI 230	Motion and Sound	2
ANI 250	3D Animation II	4
ENG 107 or	Technical Writing I	
ENG 111	Composition I	3-4
	Nat. Sci. Elective(s)	3-4

Fifth Semester		(10 credits)
ANI 260	3D Animation III	4
VID 276	Video Graphics I	3
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Program: 63

Digital Video

Complete one of these programs to learn how to create digitized video productions for the Web and other presentation forms.

Program Information Report

Digital Video Production (CTDVPC)

Certificate

Program Effective Term: Fall 2017

This program prepares students for entry-level media production positions in organizations where they will create digitized video productions for the Web and other presentation forms that may be used for informational, documentary, instructional, commercial, artistic, or other purposes. The program provides instruction in all facets of video production from program design to hands-on recording through the editing process. Students also gain skills in the use of computer software applications.

Students should choose the appropriate faculty for academic advising based on their last name: Dan Kier (A-M), Matt Zacharias (N-Z).

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
A high school Macintosh-based course, or GDT 105 with a "C-" or better, or instructor permission is recommended.

Major/Area Requirements		(20 credits)
VID 105	Foundations in Digital Video I	4
VID 125	Foundations in Digital Video II	4
VID 180 or	Television Studio I	
VID 270	Documentary Video Production	3-4
VID 203	Web Video	3
VID 255	Green Screen I	3
VID 276	Video Graphics I	3

Minimum Credits Required for the Program: 20

Program Information Report

Digital Video Advanced Production (CVDVAP)

Advanced Certificate

Program Effective Term: Fall 2017

The advanced certificate in the Digital Video program concentrates on specialty aspects of production. Each course spends a full semester concentrating on the critical phases of pre-production, production and post-production (for example, screenplays, cinematography and editing). This curriculum begins with students' creation of a screenplay and continues with sound design, cinematography, direction, advanced green screen techniques, and television studio applications. A unique component to this curriculum allows each student to write their script at the starting point and produce their concept through each class and phase of pre-production, production, and post-production. Students have the option to either complete the curriculum with one final thesis project or complete multiple project exercises.

Students should choose the appropriate faculty for academic advising based on their last name: Dan Kier (A-M), Matt Zacharias (N-Z).

Program Admission Requirements:
Completion of the Digital Video Production Certificate or comparable industry experience.

Major/Area Requirements		**(18 credits)**
VID 180 or	Television Studio I	
VID 270	Documentary Video Production	3-4
VID 210	Screenplays	3
	Select four courses from the group below:	
VID 185 or	Television Studio II	
VID 220 or	Audio for Digital Video	
VID 230 or	Directing for Video Production	
VID 240 or	Digital Cinematography	
VID 250 or	Advanced Editing	
VID 260 or	Green Screen II	
VID 277	Video Graphics II	12
Minimum Credits Required for the Program:		**18**

Program Information Report

Digital Video Production (AADVP)

Associate in Arts Degree

Program Effective Term: Fall 2017

The Associate in Arts Degree in Digital Video Production provides students with specialized training to develop proficiency in advanced and professional video production. Emphasis is placed on integrating content creation with Web skills.

Students should choose the appropriate faculty for academic advising based on their last name: Dan Kier (A-M), Matt Zacharias (N-Z).

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

First Semester		**(14 credits)**
ENG 111	Composition I	4
	Speech Elective(s)	3
HUM 120 or	Introduction to Film	
HUM 150 or	International Cinema	
HUM 185	The Horror Film	3
VID 105	Foundations in Digital Video I	4

Second Semester		**(16 credits)**
HUM 160	American Film	3
VID 125	Foundations in Digital Video II	4
VID 180 or	Television Studio I	
VID 270	Documentary Video Production	3-4
VID 255	Green Screen I	3
	Math Elective(s)	3-4

Third Semester		**(15 credits)**
ENG 226	Composition II	3
	Soc. Sci. 1 Elective(s)	3
VID 210 or	Screenplays	
VID 240	Digital Cinematography	3
VID 276	Video Graphics I	3
Elective	Select a course from the VID discipline	3

Fourth Semester		**(15 credits)**
	Nat. Sci. Elective(s)	4
	Soc. Sci. 2 Elective(s)	3
VID 203	Web Video	3
VID 295	Portfolio and Project Seminar	3
	Elective as needed to reach a minimum of 60 credit hours.	2

Minimum Credits Required for the Program: 60

Notes:

Students following the Michigan Transfer Agreement (MTA) should select a second MTA-approved Natural Science course from two different disciplines and a second Arts and Humanities course from two different disciplines.

Graphic Design

From the foundations of visual communication through production techniques, this field allows you to utilize your creative and artistic abilities.

Program Information Report

Graphic Design (CFGDTC)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This program provides students with entry-level skills in graphic design and allows students to upgrade or expand their present skills. It also is a path for upgrading or expanding skills in one's present employment. Students will focus on typography and the foundations of visual communication design for both print and on-screen media, and build skills in the most widely used graphic design software applications. This program provides credits towards the Associate in Applied Science Degree in Graphic Design.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Good computer skills and aptitude are required to enroll in GDT computer-based courses. GDT courses are taught using Macintosh computers.

Major/Area Requirements		**(27 credits)**
GDT 100	Typography I	4
GDT 104	Introduction to Graphic Design	4
GDT 112	Principles and Problem-Solving in Graphic Design	4
GDT 220	Publication Design	4
WEB 115	Introduction to Interface Design	4
WEB 215	Intermediate Interface Design	4
	Restricted Electives: ART 101, ART 102, ART 111, ART 112, ART 114, ART 120, ART 122, ART 125, ART 127, ART 129, GDT 106, GDT 107, GDT 108, GDT 151, GDT 239, GDT 245 or any 100 level or higher ANI, PHO, VID or WEB course.	3-4

Minimum Credits Required for the Program: **27**

Program Information Report

Graphic Design (APGRD)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

This program prepares students for a career as a graphic designer. Graphic designers are specialists in the field of visual communication, trained to communicate, inform, instruct or sell. Students gain skills in the principles of graphic design, publication design, interface and mobile design working on a variety of projects that focus on theory, concept development, typography and production techniques that culminates in the production of a portfolio. Creative and artistic ability is required for careers in graphic design, as well as originality and the capacity for experimentation in visual problem-solving. Students also need the ability to master software skills as they relate to each medium.

Articulation:
College for Creative Studies, BFA degree;
Eastern Michigan University, several BS degrees;
Madonna University, BA degree;
Savannah College of Art and Design, BFA degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Basic proficiency with desktop computers is required to enroll in GDT computer-based courses.

Note: Graphic Design computer-based courses are taught on Macintosh computers.

First Fall Semester		**(17 credits)**
GDT 101	History of Graphic Design	3
GDT 104	Introduction to Graphic Design	4
WEB 115	Introduction to Interface Design	4
	ENG 107 or ENG 111 or higher	3-4
	Soc. Sci. Elective(s)	3

First Winter Semester		**(14 credits)**
GDT 100	Typography I	4
GDT 112	Principles and Problem-Solving in Graphic Design	4
	MTH 125 or higher	3-4
	Restricted Electives: ART 101, ART 102, ART 111, ART 112, ART 114, ART 120, ART 122, ART 125, ART 127, ART 129, GDT 106, GDT 107, GDT 108, GDT 151, GDT 245 or any 100 level or higher ANI, PHO, VID or WEB course.	3-4

Second Fall Semester		**(16 credits)**
GDT 215	Typography II	4
GDT 220	Publication Design	4
GDT 239	Imaging and Illustration	4
WEB 215	Intermediate Interface Design	4

Second Winter Semester		**(17 credits)**
GDT 252	Advanced Digital Studio	4
GDT 290	Professional Practices	4
	Nat. Sci. Elective(s)	3-4
	Speech Elective(s)	3
	Restricted Electives: ART 101, ART 102, ART 111, ART 112, ART 114, ART 120, ART 122, ART 125, ART 127, ART 129, GDT 106, GDT 107, GDT 108, GDT 151, GDT 245 or any 100 level or higher ANI, PHO, VID or WEB course.	3-4

Minimum Credits Required for the Program: 64

Photography

Develop skills in composition, processing and presentation needed for a satisfying career in professional photography or as a means of personal expression.

Program Information Report

Photographic Imaging (CTPHOI)

Certificate

Program Effective Term: Fall 2017

This program prepares students to enter the ever-evolving field of photography by providing a strong foundation of technical and aesthetic skills. Areas of study include: basic camera operation and composition skills; film and digital exposure and processing methods; studio lighting; and printing and presentation techniques.

Major/Area Requirements		(23 credits)
PHO 111	Photography I	4
PHO 117	Introduction to the Studio	4
PHO 122	Film and Darkroom Photography	3
PHO 127	Digital Photo Imaging I	4
PHO 129	Black and White Digital Imaging	4
PHO 228	Digital Photo Imaging II	4

Minimum Credits Required for the Program: 23

Program Information Report

Photographic Technology (APPHOT)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

This program provides a comprehensive foundation in digital and film based photography. Through a combination of required basic courses and specialized elective courses, the student customizes the program to his or her particular interest in the photographic industry. Students have opportunities to work with a variety of advanced photographic equipment including digital cameras, view cameras, traditional darkroom, and various types of studio and location lighting systems. Graduating students produce professional portfolios and self-promotional materials to find employment in a variety of areas such as photographic assisting, photojournalism, fine art, freelance, portrait and wedding photography. Students also complete the program to use photography as a means of personal expression, and as preparation for transferring to four-year baccalaureate programs.

Students should choose the appropriate faculty for academic advising based on their last name: Terry Abrams (A-G), Jennifer Baker (H-O), Donald Werthmann (P-Z).

Articulation:
Brooks Institute of Photography, BA degree;
College for Creative Studies, BFA degree;
Eastern Michigan University, several BS degrees;
Savannah College of Art and Design, BFA degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

First Semester		**(15 credits)**
PHO 111	Photography I	4
PHO 122	Film and Darkroom Photography	3
PHO 127	Digital Photo Imaging I*	4
Elective	Writing Elective(s)**	4

Second Semester		**(15 credits)**
PHO 117	Introduction to the Studio	4
PHO 129	Black and White Digital Imaging	4
	Restricted Courses 1 - Complete additional credits from the PHO electives (100 level and above) and/or the following courses: ANI 150, ANI 155, ANI 160, GDT 100, GDT 104, GDT 106, GDT 107, GDT 108, GDT 112, VID 105, VID 125, WEB 110	3
Elective	Math Elective(s)***	4

Third Semester		**(16 credits)**
PHO 103	History of Photography****	3
PHO 211 or	Large Format Photography I	
PHO 220	Advanced Studio Techniques*****	3
PHO 228	Digital Photo Imaging II	4
	Restricted Courses 2 - Complete additional credits from the PHO electives (100 level and above) and/or the following courses: ANI 150, ANI 155, ANI 160, GDT 100, GDT 104, GDT 106, GDT 107, GDT 108, GDT 112, VID 105, VID 125, WEB 110	3
Elective	Soc. Sci. Elective(s)	3

Fourth Semester		**(16 credits)**
PHO 230	Portfolio Projects	3
PHO 231	Portfolio Seminar	4
	Restricted Courses 3 - Complete additional credits from the PHO electives (100 level and above) and/or the following courses: ANI 150, ANI 155, ANI 160, GDT 100, GDT 104, GDT 106, GDT 107, GDT 108, GDT 112, VID 105, VID 125, WEB 110	3
Elective	Nat. Sci. Elective(s)	3-4
Elective	Speech Elective(s)******	3

Minimum Credits Required for the Program: 62

Notes:

**PHO 127 fulfills the Computer and Information Literacy general education requirement*
***ENG 100 or ENG 111 is recommended*
****MTH 125 is recommended*
*****PHO 103 fulfills the Arts and Humanities general education requirement*
******PHO 220 requires that the prerequisite course, PHO 116, be taken prior to or concurrently with PHO 222*
*******COM 101 or COM 102 is recommended*

Web Design and Development

Join the Web development industry through the completion of these certificates and degree.

Program Information Report

Web Design and Development (CTWDDC)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This program is designed for students interested in the Web development industry. Students will create standards-compliant, accessible, and usable Web interfaces that meet both user and client needs.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
A high school course or equivalent course in basic computer skills, including use of the Internet.

Major/Area Requirements		**(24 credits)**
WEB 110	Web Development I	4
WEB 113	Web User Experience I	4
WEB 115	Introduction to Interface Design	4
WEB 210	Web Development II	4
WEB 213	Web User Experience II	4
WEB 215	Intermediate Interface Design	4

Minimum Credits Required for the Program: **24**

Program Information Report

Digital Strategy (CVWDIS)

Advanced Certificate

Program Effective Term: Fall 2017

This program is for students interested in the strategic and management aspects of web design and development. Courses focus on the knowledge and skills and skills necessary for employment as a digital strategist, web marketing specialist, business analyst, or project manager.

Program Admission Requirements:
Students must complete the Web Design and Development Certificate (CTWDDC) or have equivalent industry experience.

Major/Area Requirements		(11 credits)
WEB 233	Web Analytics and SEO	4
WEB 263	Business Analysis and Project Management	4
BMG 155	Business on the Internet	3

Minimum Credits Required for the Program: 11

Program Information Report

Web Design (CVWDSN)

Advanced Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This program is designed for students interested in the creative aspects of Web development. Courses focus on the knowledge and skills necessary for employment as a Web designer.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Students must complete the Web Design and Development Certificate or have significant industry experience in web design and HTML5/CSS3 prior to starting this certificate.

Major/Area Requirements		(9 credits)
WEB 235	Advanced Interface Design	4
WEB 255	Interaction Design	4
Elective	ART 102 or any course from the following disciplines: ANI, GDT, PHO, VID or WEB	1-4

Minimum Credits Required for the Program: **9**

Program Information Report

Web Development (CVWDEV)

Advanced Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This program is designed for students interested in Web application development and programming. Courses focus on the knowledge and skills necessary for creating database-enabled applications, dynamic content, and interactive Web sites.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Students must complete the Web Design and Development Certificate or have significant programming and HTML5/CSS3 experience prior to starting this certificate.

Major/Area Requirements		(11 credits)
WEB 230	Advanced JavaScript	4
WEB 250	PHP and MySQL	4
Elective	Any CPS class or CIS 121	3-4

Minimum Credits Required for the Program: **11**

Program Information Report

Web Design and Development (APWDDD)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

This is a comprehensive, rigorous program for students interested in a career in the Web development industry. Coursework prepares students for employment as Web Developers, with options to specialize in Web Design or Web Development. Completion of the Web Design and Development Certificate and one of the related advanced certificates is required in order to complete this degree.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Continuing Eligibility Requirements:
For successful continuation in the program, a minimum grade of "C" is required for all WEB courses.

Minimum Concentration Credits Required for the Program: 60

Web Design and Development Concentrations

Web Design		(60 credits)
First Semester		**(15 credits)**
WEB 110	Web Development I	4
WEB 113	Web User Experience I	4
WEB 115	Introduction to Interface Design	4
	Writing Elective(s)	3
Second Semester		**(15 credits)**
WEB 210	Web Development II	4
WEB 213	Web User Experience II	4
WEB 215	Intermediate Interface Design	4
	Speech Elective(s)	3
Third Semester		**(16 credits)**
WEB 235	Advanced Interface Design	4
Elective	Any course from the following disciplines: ANI, GDT, PHO, VID or WEB.	3
Elective	WEB 233 or any GDT course.	3-4
	Soc. Sci. Elective(s)	3
	Arts/Human Elective(s)	3
Fourth Semester		**(14 credits)**
WEB 255	Interaction Design	4
	Math Elective(s)	3-4
	Nat. Sci. Elective(s)	4
Elective	Any course from the following disciplines: ANI, GDT, PHO, VID or WEB to meet a minimum of 60 credit hours.	3-4

Minimum Credits Required for the Concentration or Option: 60

Web Development		(60 credits)
First Semester		**(15 credits)**
WEB 110	Web Development I	4
WEB 113	Web User Experience I	4
WEB 115	Introduction to Interface Design	4
	Writing Elective(s)	3
Second Semester		**(15 credits)**
WEB 210	Web Development II	4
WEB 213	Web User Experience II	4
WEB 215	Intermediate Interface Design	4
	Speech Elective(s)	3

Program Information Report

Third Semester		(16 credits)
WEB 230	Advanced JavaScript	4
Elective	Any course from the following disciplines: ANI, GDT, PHO, VID or WEB.	3
Elective	Any CPS class or CIS 121 or CIS 282.	3-4
	Soc. Sci. Elective(s)	3
	Arts/Human Elective(s)	3

Fourth Semester		(14 credits)
WEB 250	PHP and MySQL	4
	Math Elective(s)	3-4
	Nat. Sci. Elective(s)	4
Elective	Any course from the following disciplines: ANI, GDT, PHO, VID or WEB to meet a minimum of 60 credit hours.	3-4

Minimum Credits Required for the Concentration or Option: 60

Minimum Credits Required for the Program: 60

School of Information Technology

The School of Information Technology gathers the diverse areas that make up the computer technology of today. From basic programming languages to systems development through networking, these programs provide the core of information technology. Develop skills in computer networking or programming in the growing field of applied information technology.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

After completing a certificate, students can progress to the next level, the advanced certificate. The credit hours required for these programs also vary. This type of certificate provides a more specialized level of skill development, and often allows students to upgrade their positions at their places of employment.

The next level, an Associate in Applied Science, is available for some programs. For some career fields, it is possible to earn a certificate, an advanced certificate, and an Associate in Applied Science degree in the same field. In these cases, the credit hours from the certificate and advanced certificate can be applied to the credit hours needed for the Associate in Applied Science degree.

Alternatively, students can earn an AAS in Occupational Studies by completing a certificate, an advanced certificate (if it exists) and General Education requirements.

Computer Science and Information Systems

Interested in a bachelor's degree in computer science or (business) information systems? This area provides the foundation you need to be successful.

Program Information Report

Mobile Device Programming (CVCSMD)

Advanced Certificate

Program Effective Term: Fall 2017

This program prepares students to develop applications that run on mobile devices such as an IPhone, Ipad or Android phone. This is a rapidly developing market. Students will develop programming skills using the current programming language(s) need to success in jobs such as programmer/analyst.

Program Admission Requirements:
Academic Math Level 4 is required to enroll in CPS 161 and above

Major/Area Requirements		(19 credits)
CPS 161	An Introduction to Programming with Java	4
CPS 251	Android Programming Using Java	4
CPS 255	IOS/Apple Programming Fundamentals	4
CPS 256	Advanced IOS/Apple Programming	4
CIS 282 or	Database Principles and Application	
CPS 298	Professional Team Programming	3-4

Minimum Credits Required for the Program: 19

Computer Security

Program Information Report

Principles of Cybersecurity (CTCYS)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

Program is also available online

This program is designed to meet the emerging demand for highly skilled cybersecurity professionals within the information technology industry and business community. This certificate program provides an in-depth examination of cybersecurity technology with an emphasis on executing a vulnerability analysis of an organization network and network hardening. The student will be trained to use various tools to analyze networks for vulnerabilities and secure networks through the application of various defense mechanisms including firewalls, intrusion detection and Virtual Private Networks (VPN).

Applying for Admission to the Program:
In order to meet the requirements of the market for jobs in network security, students should have professional or educational experience in network and system administration.

Program Admission Requirements:
Students must have basic knowledge of Linux, Windows, working at the command line of any operating system and networking.

Continuing Eligibility Requirements:
Students must maintain a grade of "C" or better in the program requirements.

Major/Area Requirements		**(20 credits)**
CNT 206	Introduction to Networks	4
CNT 216	Routing and Switching Essentials	4
CSS 200	Introduction to Network Security - Security+	4
CSS 205	Essentials of Network Penetration Testing	4
CSS 210	Network Perimeter Protection - CCNA Security	4

Minimum Credits Required for the Program: **20**

Program Information Report

Cybersecurity (APCSCY)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

In this program, students are introduced to the skills and strategies needed to plan and carry out security measures to protect an organization's computer networks and systems. Students will learn networking and network security skills using server, infrastructure and perimeter technologies working in Linux operating systems, Cisco infrastructure and perimeter devices, and Microsoft operating systems.

Continuing Eligibility Requirements:
Minimum grade of "C" in all major courses

First Semester		(16 credits)
CIS 121	Linux/UNIX I: Fundamentals	4
CPS 120	Introduction to Computer Science	3
CPS 161 or	An Introduction to Programming with Java*	
CST 160 or	Computer Technology I	
CST 225	PC Networking	3
Elective	Writing Elective(s)**	3
Elective	Nat. Sci. Elective(s)	3-4

Second Semester		(16 credits)
CNT 206	Introduction to Networks	4
CNT 216	Routing and Switching Essentials	4
CSS 200	Introduction to Network Security - Security+	4
CSS 205	Essentials of Network Penetration Testing	4

Third Semester		(15 credits)
CIS 161	Introduction to PowerShell	4
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 211	Installing and Configuring Windows Server 2012	4
MTH 160	Basic Statistics	4

Fourth Semester		(16 credits)
CSS 201	Introduction to Cryptography	3
CSS 210	Network Perimeter Protection - CCNA Security	4
Elective	Arts/Human. Elective(s)	3
Elective	Speech Elective(s)***	3
Elective	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Program: 63

Notes:

**CPS 161 is recommended for students who plan to transfer to a 4-year college. Students who have no programming experience should take both CPS 120 and CPS 161.*
***Students planning to transfer to a 4-year college should take ENG 111; otherwise, student may consider ENG 107.*
****Students should consider COM 101 or COM 225.*

Networking

Develop and manage computer networks as a network administrator/engineer.

Program Information Report

Computer Systems Technology (CTCSTC)

Certificate

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

This program prepares students for employment as a microcomputer service technician. While preparing students to pass the Computer Technology Industry Association's (CompTIA) A+ Certification Examination, the program goes well beyond the requirements of the exam. The student will develop hands-on troubleshooting skills in solving hardware problems, working with operating systems, and relating to customers. This program also provides the foundation for Washtenaw Community College's two advanced certificates in computer networking.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Major/Area Requirements		(16 credits)
CST 118	Microsoft Command Line Fundamentals	2
CST 150 or	Computer Systems Technology I	
CST 160	Computer Technology I	4-5
CST 155 or	Computer Systems Technology II	
CST 165	Computer Technology II	4-5
CST 225	PC Networking	3
BMG 205 or	Creating the Customer Experience	
CST 174 or	CST Co-op I	
CST 270	Computer Forensics I	3-4
Minimum Credits Required for the Program:		**16**

Program Information Report

Computer Networking Academy I (CVCNA1)

Advanced Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This Cisco Networking Academy program prepares students for a job as a network technician where they will install, configure, and troubleshoot Local Area Networks under the supervision of a network administrator. The focus is placed on cabling systems and internetworking hardware. It also gives students the knowledge they'll need to pass the Cisco Certified Network Associate Examination.

Program Admission Requirements:
Students must complete the Computer Systems Technology (CTCSTC) Certificate with a GPA of 2.0 or better or have equivalent industry experience to be admitted into the program.

Major/Area Requirements		(16 credits)
CNT 206	Introduction to Networks	4
CNT 216	Routing and Switching Essentials	4
CNT 226	Scaling Networks	4
CNT 236	Internetworking IV - WANs	4

Minimum Credits Required for the Program: **16**

Program Information Report

Computer Networking Operating Systems I (CVCNO)

Advanced Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This program lays a foundation in preparation for a profession as a Microsoft Certified IT Professional. Students will install, configure, and troubleshoot Microsoft Client Server Networks. The program is designed to deploy and manage both Windows Server 2003 and Server 2008 with Client Workstations in simulated real-life situations. Administering, managing, monitoring, and troubleshooting of Server 2008 Active Directory, Network Services, and other Server functions are all emphasized. All Server configured activities are tested out using Client Workstations to ensure they work, just as in a real business environment. The program is structured for both those who are working towards Microsoft Server 2003 MCSA/MCSE certifications, and/or Server 2008 MCTS/MCITP certifications. Also those already having certification who want to enhance their knowledge with the newer operating systems, as well as those who may just want to learn how to effectively implement these technologies are welcome.

Program Admission Requirements:
Completion of the Computer Systems Technology Program (CTCSTC) or CST 150 and CST 225 with a minimum grade of "C," passing the COMPTIA certification, or equivalent industry experience.

Major/Area Requirements		**(15 credits)**
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 211	Installing and Configuring Windows Server 2012	4
CNT 223	Administering Windows Server 2012	4
CNT 224	Configuring Advanced Windows Server 2012 Services	4

Minimum Credits Required for the Program: **15**

Notes:

This program is designed to be completed in a two semester time frame.

Program Information Report

Computer Systems and Networking (APCSN)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

In this program, students will learn about the latest desktop, server, and networking technologies. This program has a core of hardware, operating system and scripting that all students must complete. In addition to the common core subjects, students will select a specialized track in one of the following areas: Local and Wide Area Networking, Microsoft Network Operating Systems, Linux Network Operating Systems, Computer and Network Security, or Data Recovery.

Articulation:
Davenport University, Bachelor degree;
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Minimum Concentration Credits Required for the Program: 65
Select a concentration.

Computer Systems and Networking Concentrations

Computer and Network Security (CSEC)		(66 credits)
First Semester		**(16 credits)**
CST 118	Microsoft Command Line Fundamentals	2
CST 160	Computer Technology I	4
CST 165	Computer Technology II	4
CST 225	PC Networking	3
Elective	Speech Elective(s)	3
Second Semester		**(17 credits)**
CIS 121	Linux/UNIX I: Fundamentals	4
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 211	Installing and Configuring Windows Server 2012	4
Elective	Math Elective(s)	3
Elective	Writing Elective(s)	3
Third Semester		**(18 credits)**
CNT 206	Introduction to Networks	4
CNT 216	Routing and Switching Essentials	4
CSS 200	Introduction to Network Security - Security+	4
	Nat. Sci. Elective(s)	3
	Soc. Sci. Elective(s)	3
Fourth Semester		**(15 credits)**
CIS 161	Introduction to PowerShell	4
CSS 205	Essentials of Network Penetration Testing	4
CSS 210	Network Perimeter Protection - CCNA Security	4
Elective	Arts/Human. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 66

Computer Forensics (CSFC)		(65 credits)
First Semester		**(16 credits)**
CST 118	Microsoft Command Line Fundamentals	2
CST 160	Computer Technology I	4
CST 165	Computer Technology II	4
CST 225	PC Networking	3
Elective	Speech Elective(s)	3
Second Semester		**(17 credits)**
CIS 121	Linux/UNIX I: Fundamentals	4
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 211	Installing and Configuring Windows Server 2012	4

Elective	Math Elective(s)	3
Elective	Writing Elective(s)	3

Third Semester		(15 credits)
CNT 206	Introduction to Networks	4
CNT 216	Routing and Switching Essentials	4
CST 270	Computer Forensics I	4
Elective	Soc. Sci. Elective(s)	3

Fourth Semester		(17 credits)
CIS 161	Introduction to PowerShell	4
CST 275	Computer Forensics II	4
CST 278	Computer Forensics for Mobile Devices	3
Elective	Arts/Human. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 65

Linux Network Operating System (LNOS) (66 credits)

First Semester		(16 credits)
CST 118	Microsoft Command Line Fundamentals	2
CST 160	Computer Technology I	4
CST 165	Computer Technology II	4
CST 225	PC Networking	3
Elective	Speech Elective(s)	3

Second Semester		(17 credits)
CIS 121	Linux/UNIX I: Fundamentals	4
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 211	Installing and Configuring Windows Server 2012	4
Elective	Math Elective(s)	3
Elective	Writing Elective(s)	3

Third Semester		(18 credits)
CIS 206	Linux/UNIX II: Basic System Administration, Networking, and Security	4
CNT 206	Introduction to Networks	4
CNT 216	Routing and Switching Essentials	4
Elective	Nat. Sci. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Fourth Semester		(15 credits)
CIS 161	Introduction to PowerShell	4
CIS 221	Linux/UNIX Programming and Scripting I	4
CIS 208	Linux/UNIX III: Intermediate System Administration, Networking, and Security	4
Elective	Arts/Human. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 66

Microsoft Network Operating System (MNOS) (66 credits)

First Semester		(16 credits)
CST 118	Microsoft Command Line Fundamentals	2
CST 160	Computer Technology I	4
CST 165	Computer Technology II	4
CST 225	PC Networking	3
Elective	Speech Elective(s)	3

Second Semester		(17 credits)
CIS 121	Linux/UNIX I: Fundamentals	4
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 211	Installing and Configuring Windows Server 2012	4
Elective	Math Elective(s)	3
Elective	Writing Elective(s)	3

Third Semester		(18 credits)
CNT 206	Introduction to Networks	4
CNT 216	Routing and Switching Essentials	4
BMG 205 or	Creating the Customer Experience	
CST 270	Computer Forensics I	4
Elective	Nat. Sci. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Fourth Semester		(15 credits)
CIS 161	Introduction to PowerShell	4
CNT 223	Administering Windows Server 2012	4
CNT 224	Configuring Advanced Windows Server 2012 Services	4
Elective	Arts/Human. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 66

Local and Wide Area Networking (NETW) (66 credits)

First Semester		(16 credits)
CST 118	Microsoft Command Line Fundamentals	2
CST 160	Computer Technology I	4
CST 165	Computer Technology II	4
CST 225	PC Networking	3
Elective	Speech Elective(s)	3

Second Semester		(17 credits)
CIS 121	Linux/UNIX I: Fundamentals	4
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 211	Installing and Configuring Windows Server 2012	4
Elective	Math Elective(s)	3
Elective	Writing Elective(s)	3

Third Semester		(18 credits)
CNT 206	Introduction to Networks	4
CNT 216	Routing and Switching Essentials	4
BMG 205 or	Creating the Customer Experience	
CST 270	Computer Forensics I	4
Elective	Nat. Science Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Fourth Semester		(15 credits)
CIS 161	Introduction to PowerShell	4
CNT 226	Scaling Networks	4
CNT 236	Internetworking IV - WANs	4
Elective	Arts/Human. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 66

Minimum Credits Required for the Program: 65

Programming

Learn the foundation of computer programming or specialize in a programming language through these programs.

Program Information Report

Applied Data Science (CTADS)

Certificate

Program Effective Term: Fall 2017

The Applied Data Science certificate is intended for students who want to pursue a career in data analytics ("big data") or enhance their current business skills. Students learn how to capture, manipulate, and analyze structured data-the massive volume of numeric values that can be easily stored and sorted. They learn how to transform data into information to enable faster and more intelligent decision-making.

Continuing Eligibility Requirements:
Minimum grade of "C" in major/area courses.

Major/Area Requirements		(17 credits)
BMG 265	Business Statistics	3
BMG 275	Business and Supply Chain Analytics	4
BMG 285 or	Applied Data Analytics	
CIS 285	Applied Data Analytics	4
CIS 110	Introduction to Computer Information Systems	3
CIS 282	Database Principles and Application	3

Minimum Credits Required for the Program: 17

Program Information Report

C# Programming for Modern Computing Environments (CTCPMC)

Certificate

Program Effective Term: Fall 2017

This program focuses on one of today's most in-demand programming platforms, C#.Net. Students progress through a series of courses starting with basic computing logic and algorithm development, database theory, and object-oriented programming techniques. The program culminates in a hands-on capstone project targeting the creation of an application for modern embedded computer environments. The skills learned in this program will be adaptable to the development of mobile apps, embedded apps, connected vehicle applications and intelligent transportation systems, infotainment applications, desktop applications, and applications for Internet devices.

Program Admission Requirements:
Prior knowledge of the Hypertext Markup Language (HTML), Cascading Style Sheets (CSS), networking fundamentals, client/server architecture, and basic electricity/electronics is recommended. Suggested courses include:

-ELE 111 Electrical Fundamentals
-ELE 211 Basic Electronics
-CST 225 PC Networking
-WEB 110 Web Development I

Continuing Eligibility Requirements:
Students must maintain a "B-" grade point average in program requirements.

Major/Area Requirements		(18 credits)
CPS 120	Introduction to Computer Science	3
CPS 192	Introduction to C#.Net	4
CPS 292	Intermediate and Advanced C#.Net	4
CIS 282	Database Principles and Application	3
CPS 296	Connected Device Projects with C#.Net	4

Minimum Credits Required for the Program: 18

Program Information Report

Foundations of Information Systems (CTFIS)

Certificate

Program Effective Term: **Fall 2017**

High Skill Occupation **High Wage Occupation**

The Foundations of Information Systems certificate provides a conceptual framework for those students wishing to become a professional in computer information systems or computer programming. The student will be introduced to computer science programming logic, as well as developing algorithms to solve programming problems. In addition, students will acquire an understanding of the impact of information systems and information technology on the business, industrial, and other environments in which they will work as programmers or analysts.

Continuing Eligibility Requirements:
Students must maintain a minimum GPA of 2.0 or better.

Major/Area Requirements		**(10 credits)**
CIS 110	Introduction to Computer Information Systems	3
CIS 121	Linux/UNIX I: Fundamentals	4
CPS 120	Introduction to Computer Science	3

Minimum Credits Required for the Program: **10**

Program Information Report

C++ Programming (CVCPGM)

Advanced Certificate

Program Effective Term: **Fall 2017**

High Skill Occupation **High Wage Occupation**

Program is also available online

This program prepares students for jobs as a computer programmer where they will write C++ code and develop applications utilizing object-oriented programming techniques. Students will also develop skills that can be applied to the related jobs of programmer/analyst and software architect.

Program Admission Requirements:
Prior programming experience is recommended. Students who have no programming experience should consider taking CPS 120.

Major/Area Requirements		**(12 credits)**
CPS 171	Introduction to Programming with C++	4
CPS 271	Object Features of C++	4
CPS 272	Data Structures with C++	4

Minimum Credits Required for the Program: **12**

Program Information Report

Program in Java (CVJVPR)

Advanced Certificate

Program Effective Term: **Fall 2017**

Program is also available online

This program is intended for students who need to acquire skills in the Java programming language. The program also gives students skills that can be applied to the related jobs of programmer/analyst.

Program Admission Requirements:
Prior programming experience is recommended. Students who have no programming experience should consider taking CPS 120.

Major/Area Requirements		**(16 credits)**
CPS 161	An Introduction to Programming with Java	4
CPS 261	Advanced Java Concepts	4
	Select two of the following courses: CPS 251, CPS 276 or CPS 278, CPS 298	8

Minimum Credits Required for the Program: **16**

Program Information Report

Web Database Programming Professional (CVWDPP)

Advanced Certificate

Program Effective Term: Fall 2017

This program focuses on the development of web databases and e-commerce applications. The coursework emphasizes server-side programming and is intended for students with strong programming background. Students will be exposed to a professional team programming exercise. If a student needs exposure to front-end web development, a certificate in the Web Design and Development discipline should be considered.

Applying for Admission to the Program:
Academic Math Level 4 is required to enroll in CPS 161.

Program Admission Requirements:
Completion of CPS 161 or CPS 171 with a minimum grade of "B-" or instructor consent.

Major/Area Requirements		(16 credits)
CPS 276	Web Programming Using Apache, MySQL, and PHP	4
CPS 278	Java Server Programming	4
CPS 298	Professional Team Programming	4
CIS 282 or	Database Principles and Application*	
WEB 230	Advanced JavaScript	3-4
	Elective(s) Any 100-level or above course to bring the total credits to a minimum of 16.*	1

Minimum Credits Required for the Program: 16

Notes:

**Students who select CIS 282 must take one (1) additional credit to reach 16 credits.*

Program Information Report

Computer Science: Programming in Java (ASCSPJ)

Associate in Science Degree

Program Effective Term: Fall 2017

High Skill Occupation High Wage Occupation

This program prepares students to transfer to Eastern Michigan University to complete a bachelor's degree in Computer Science or Applied Computer Science and to pursue careers in computer science fields such as computer systems programming and analysis, software development and maintenance, and applications programming.

Articulation:
Davenport University, BS degree;
Eastern Michigan University, BS degree;
Kaplan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Students need an Academic Math Level of 4 or higher to enroll in MTH 176 and CPS 161.

First Semester		(14 credits)
CPS 161	An Introduction to Programming with Java	4
Elective	MTH 176 or higher 4 credit math course	4
	Arts/Human. 1 Elective(s)	3
	Nat. Sci. 1 Elective(s)	3-4

Second Semester		(15 credits)
ENG 111	Composition I	4
CPS 261	Advanced Java Concepts	4
CPS 276	Web Programming Using Apache, MySQL, and PHP	4
	Soc. Sci. 1 Elective(s)	3

Third Semester		(17 credits)
COM 225	Intercultural Communication*	3
CPS 278	Java Server Programming	4
	Nat. Sci. 2 Elective(s)	4
	Soc. Sci. 2 Elective(s)	3
CIS 282	Database Principles and Application	3

Fourth Semester		(14 credits)
CPS 251	Android Programming Using Java	4
CPS 298	Professional Team Programming	4
ENG 226	Composition II	3
	Arts/Human. 2 Elective(s)	3

Minimum Credits Required for the Program: 60

Notes:

**Satisfies EMU's Diverse World Requirement.*

See an advisor to choose courses that meet the requirements of the program to which you are transferring.

Program Information Report

Information Systems: Programming in C++ (ASISPC)

Associate in Science Degree

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This program prepares students to transfer to complete a bachelor's degree in Business Administration with a major in Computer Information Systems. Undergraduates and graduates of CIS programs are prepared to create and maintain information systems for organizations, manage information systems projects, and develop strategies for effective use of enterprise information resources.

Articulation:
Davenport University, BS degree;
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Students need an Academic Math Level of 4 to enroll in MTH 176.

First Semester		(14 credits)
COM 225	Intercultural Communication*	3
CPS 171	Introduction to Programming with C++	4
ENG 111	Composition I	4
	Computer Lit. Elective(s)	3

Second Semester		(18 credits)
CIS 121	Linux/UNIX I: Fundamentals	4
CPS 271	Object Features of C++	4
ENG 226	Composition II	3
	MTH 176 or higher 4 credit math course	4
	Arts/Human. 1 Elective(s)	3

Third Semester		(15 credits)
CPS 276	Web Programming Using Apache, MySQL, and PHP	4
	Nat. Sci. Elective(s)**	4
	Soc. Sci. 1 Elective(s)***	3
	Electives Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 282, CPS 161, CPS 251, CPS 261, CPS 278	4

Fourth Semester		(17 credits)
CPS 272	Data Structures with C++	4
	Arts/Human. 2 Elective(s)	3
	Soc. Sci. 2 Elective(s)***	3
	Students following the Michigan Transfer Agreement (MTA) should complete a second natural science course. MACRAO students should complete a Soc. Sci. 3 Elective(s).***	3-4
	Electives Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 282, CPS 161, CPS 251, CPS 261, CPS 278	4

Minimum Credits Required for the Program: **64**

Notes:

**Satisfies EMU's Diverse World Requirement*
***Students transferring to a four-year institution should choose a lab-based, MTA-approved science course.*
See an advisor to choose courses that meet the requirements of the program to which you are transferring.
****Choose three courses from at least two Social and Behavioral Science disciplines.*

This course sequencing aligns with students starting in the Fall semester. Students starting the Winter semester should switch the order in which they take CPS 272 and CPS 276.

Systems Development and Administration

Develop and manage computer systems using universal operating systems.

Program Information Report

Linux/UNIX Systems (CTLUX)

Certificate

Program Effective Term: Fall 2017

This certificate helps prepare students to complete the Linux+ and LPIC-1 industry certificates. Linux is a popular web server, file server and database hosting platform and is commonly used in everything from mobile computing devices to large scale data center environments and supercomputers.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Completion of a CIS (above CIS 100), CPS, or CSS course, or permission of instructor.

Major/Area Requirements		**(16 credits)**
CIS 121	Linux/UNIX I: Fundamentals	4
CIS 206	Linux/UNIX II: Basic System Administration, Networking, and Security	4
CIS 208	Linux/UNIX III: Intermediate System Administration, Networking, and Security	4
CIS 221	Linux/UNIX Programming and Scripting I	4

Minimum Credits Required for the Program: 16

Notes:

The following sequence of courses is recommended. Please check course descriptions for pre and co-requisites:

I
CIS 121

II
CIS 206
CIS 208
CIS 221

School of Music and Performing Arts

Students learn basic creative and performance skills in music, drama and dance and how they are applied in a professional setting. Whether you are exploring your own talents, coordinating the talents of others, or practicing the techniques you will need to make a living at your craft, the School of Music and Performing Arts provides the fundamentals you need.

Washtenaw Community College offers a certificate for students who want to begin new careers, or advance in their existing careers. The certificate can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs. Students preparing for a four-year degree program can begin their studies by obtaining a Liberal Arts Transfer Associate in Arts degree, which is transferrable to most baccalaureate programs. This degree is described in the Transfer and University Parallel Programs section of the catalog.

Alternatively, students can earn an AAS in Occupational Studies by completing a certificate and General Education requirements.

Music and Performing Arts

Develop the skills for a career in audio engineering or production or refine the skills used in your craft through these certificate programs.

Audio Production and Engineering (CTMPEA)

Certificate

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

This program is designed for students who wish to develop skills in audio production and engineering that can be applied to multiple industries from music to the digital media arts. Students will assess their personal skills and interests against emerging trends in the industry and be given instruction and the opportunity to receive nationally recognized Avid Pro Tools certification. In addition, students will enhance their engineering skills in multiple recording and live sound settings from solo or group recording to live event reinforcement. Students will also advance their understanding of keyboard theory, music composition for software and develop a professional portfolio and resume by collaborating and networking with clients and professionals in their industry.

Major/Area Requirements		**(19 credits)**
MUS 170	Introduction to Audio Technology	3
MUS 175	Audio Recording Technology (Pro Tools Certification)	3
MUS 245	Composition and Arranging for Keyboard	2
MUS 248	Sound Reinforcement for Stage	3
MUS 275	Advanced Audio Recording Technology	3
MUS 286	Music/Audio Project and Portfolio Production	3
	Restricted Elective (select one): MUS 140, MUS 142, MUS 147, MUS 154, MUS 155 or MUS 285	2-3
Minimum Credits Required for the Program:		**19**

Program Information Report

Fine and Performing Arts (CTFPA)

Certificate

Program Effective Term: Fall 2017

In this program, students are given the opportunity to develop and refine the skills used in their craft. The student's career plans are enriched through the opportunity to develop a plan for self-management. Together, these two areas will help students determine their short-and-long term career goals.

Major/Area Requirements		**(15 credits)**
ART 130 or	Art Appreciation	
ART 131 or	Art Appreciation through Art Museum Experiences	
MUS 180	Music Appreciation: Our Musical World	3
ART 285 or	Self-Management for Working Artists	
MUS 285	Self Management for Working Artists	3
	Choose nine credits from a single discipline in either ART, DAN*, DRA or MUS*	9
Minimum Credits Required for the Program:		**15**

Notes:

**Credit for courses that can be repeated for credit will be counted only two times toward the minimum of nine credits, regardless of the number of times the course can be repeated.*

Program Information Report

School of Nursing and Health Sciences

Find your place in the growing field of health care. The School of Nursing and Health Sciences provides a variety of programs designed to prepare the student for entry-level positions in dental assisting, pharmacy technology, physical therapist assistant, radiography, nursing assistant or professional nursing. The health care foundations certificate provides a starting point for prospective nursing and health science students or provides the general education courses to move from completion of a certificate program into an associate degree program.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

After completing a certificate, students can progress to the next level, the advanced certificate. The credit hours required for these programs also vary. This type of certificate provides a more specialized level of skill development, and often allows students to upgrade their positions at their places of employment.

The next level, an Associate in Applied Science, is available for some programs. For some career fields, it is possible to earn a certificate, an advanced certificate, and an Associate in Applied Science degree in the same field. In these cases, the credit hours from the certificate and advanced certificate can be applied to the credit hours needed for the Associate in Applied Science degree.

Alternatively, students can earn an AAS in Occupational Studies by completing a certificate, an advanced certificate and General Education requirements.

Dental Assisting

Prepare for a career as a Registered Dental Assistant through the completion of this program.

Program Information Report

Dental Assisting (CFDAC)

Certificate

Program Effective Term: Fall 2017

High Demand Occupation

This program prepares students for entry-level dental assisting positions in a variety of settings such as private dental offices, dental schools, the military, and dental insurance offices. The curriculum includes the required dental radiography courses that allow graduates to expose dental radiographs in the State of Michigan. The program also prepares students for the Dental Assisting National Board (DANB) examination, which leads to the nationally recognized status of a Certified Dental Assistant (CDA). As a CDA, graduates assist in the treatment of patients. Graduates of the program are also prepared to take the Michigan State Board of Dentistry examination, which gives recognition as a Registered Dental Assistant (RDA). As an RDA in the State of Michigan, graduates can perform specific intra-oral functions generally performed by a dentist. The program is accredited by the American Dental Association Commission on Dental Accreditation, 211 East Chicago Avenue, Chicago, Illinois 60611.

Students may enroll in this program in one of two pathways. Pathway I is the format for the student who is not employed in a dental office. Pathway II (ADAEP) is the advanced standing option for the dental assistant with two or more years of experience as a dental assistant who has passed all three portions of the Dental Assisting National Board (DANB) CDA examination. These pathways are described in detail at http://health.wccnet.edu/dentalassisting/certification/.

Applying for Admission to the Program:
A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page http://www.wccnet.edu/studentconnection/admissions/health-second-program/. Completed and signed applications must be submitted during the dates indicated on the application to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building.

Program Admission Requirements:
Washtenaw Community College uses a competitive admission process for high demand programs in health care. There are multiple requirements that must be completed prior to submitting an application for admission. For detailed information regarding admission to this health care program, please visit our Health Care website at http://health.wccnet.edu/. Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change.

Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program. Details regarding WCC's Admission to High Demand Programs policy including priority levels are on WCC's Board of Trustees policy page: http://www.wccnet.edu/trustees/policies/2005/. Details regarding WCC's point scales that are used to calculate points are on WCC's Student Connection, Health and Second Tier Program, information page: http://www.wccnet.edu/studentconnection/admissions/health-second-program/ .

Admission Requirements for Pathway I (On Campus):
Each year approximately 24 students are accepted to Pathway I for a Fall start.
1. Admission to WCC.
2. Attendance at a mandatory information session.
3. Program prerequisite courses:
a. ACS 1035 (Introduction to Online Learning)
b. HSC 101 or HSC 124 with a minimum grade of C+/2.3
4. Academic Reading Level of 6 (College Level)
5. Academic Writing Level of 6 (College Level)
6. Minimum cumulative college GPA of 2.3 at WCC (6 or more college credits completed at WCC) or cumulative college GPA of 2.3 from all colleges/universities attended or cumulative high school GPA of 2.3 from all high schools attended.
7. Verification of high school diploma, GED or higher degree.
8. 18 years of age by October 31 of the year student starts the program.
9. Signed Student Competencies Form (see application packet). WCC reserves the right to request, before or during the program, that students successfully demonstrate specific physical and cognitive abilities related to the program.
10. Criminal background check clearance (refer to the Information Release Authorization Form in the admission packet).
11. Residency verification.

Admission Requirements for Pathway II (ADAEP):
Each year, approximately 36 students are accepted to Pathway II for a Fall, Winter and Spring/Summer semester start (12 per semester).
1. Admission to WCC.
2. Contact Kathleen Weber in the Dental Assisting Department at (734) 973-3338.
3. Program prerequisite courses:
a. ACS 1035 (Introduction to Online Learning)
4. Academic Reading Level of 6 (College Level).
5. Academic Writing Level of 6 (College Level).
6. Current and valid CPR card.

7. Pass all three portions (GC, RHS and ICE) of the Dental Assisting National Board (DANB) Certified Dental Assisting (CDA) Examination or graduate from an American Dental Association (ADA) Commission on Dental Accreditation (CODA) Accredited Dental Assisting program.
8. Criminal background check clearance (refer to the Information Release Authorization Form in the admission packet).
9. Students must be employed in a dental office at least 24 hours per week as a chairside dental assistant. The participating dentist must validate skills the student's skills (see the Student Agreement of Participation and Dentist Agreement of Participation forms in the admission packet).
10. Residency verification.

Continuing Eligibility Requirements:
Continuing Eligibility for Pathway I (On Campus):
1. Additional background checks may be conducted at any time during the program. Failure to receive an acceptable drug test and/or criminal background/fingerprinting check at any time will result in dismissal from the program.
2. Students must complete any other health requirements as designated by the clinical sites.
3. All Dental Assisting (DEN) and support courses to the program must be completed with a minimum grade of C/2.0.
4. Students who are dismissed from the program may not be eligible to reapply to the program.

Continuing Eligibility for Pathway II (ADAEP):
1. Additional background checks may be conducted at any time during the program. Failure to receive an acceptable drug test and/or criminal background/fingerprinting check at any time will result in dismissal from the program.
2. Continual employment working a minimum 24 hours per week as a chairside dental assistant during the program is required.
3. All Dental Assisting (DEN) and support courses to the program must be completed with a minimum grade of C/2.0.
4. Students who are dismissed from the program may not be eligible to reapply to the program.

Minimum Option Credits Required for the Program: 38

Dental Assisting Options

Pathway I		**(38 credits)**
Semester 1 (Fall)		**(14 credits)**
DEN 102	Managing Safe Practice in Dentistry	1
DEN 106	Biomedical Science for Dental Assistants	2
DEN 107	Oral Anatomy	2
DEN 108	Dental Radiography	2
DEN 110	Basic Clinical Dental Assisting	4
DEN 112	Dental Materials	3
Semester 2 (Winter)		**(12 credits)**
DEN 118	Preventive Dentistry	2
DEN 120	Oral Diagnosis	1
DEN 128	Dental Radiography Practicum	1
DEN 129	Oral Pathology and Dental Therapeutics	2
DEN 130	Clinical Practice	2
DEN 131	Principles of Dental Specialties	4
Semester 3 (Spring/Summer)		**(12 credits)**
DEN 202	Advanced Clinical Practice	2
DEN 204	Advanced Functions	4
DEN 212	Dental Practice Management	3
BMG 207 or	Business Communication	
ENG 111	Composition I*	3-4
Minimum Credits Required for the Concentration or Option: 38		

Pathway II (ADAEP)		**(38 credits)**
DANB Exam		**(22 credits)**
	Students must pass all three portions of the Dental Assisting National Board (DANB) Certified Dental Assistant (CDA) exam prior to entry.	22
First Semester		**(16 credits)**
DEN 204	Advanced Functions	4
DEN 230	Alternative Dental Assisting Education Project	9
BMG 207 or	Business Communication	
ENG 111	Composition I*	3-4
Minimum Credits Required for the Concentration or Option: 38		

Program Information Report

Minimum Credits Required for the Program: **38**

Notes:

**If you are planning to pursue an Associate's degree.*
Dental Assisting Certificate and Degree Completion
Students completing the Dental Assisting courses outlined above will obtain a Certificate in Dental Assisting. Students may also complete an associate degree by using the same core dental assisting courses in addition to completing the general education requirements and electives for an Associate in Applied Science Degree in Occupational Studies.

Health Care Foundations

This certificate program can provide the essential basic skills to prepare for a specialized health care program.

Program Information Report

Health Care Foundations (CTHCF)

Certificate

Program Effective Term: Fall 2017

High Demand Occupation

This program helps students acquire basic knowledge and skills in math, foundational sciences, healthcare terminology and general education courses. The certificate fulfills major pre-admission requirements for Nursing, Pharmacy Technology, Physical Therapist Assistant, Radiography, Surgical Technology and general education requirements for an Associate in Applied Science degree. It provides students applying for a "high demand" health care associate's degree program with a certificate for the completion of most general education and/or pre-admission course requirements of the intended program. Students who plan to enter health care programs are encouraged to contact a counselor.

Minimum Concentration Credits Required for the Program: 25
Select a concentration for requirements and total credits required for program.

Health Care Foundations Concentrations

Nursing Intent		(26 credits)
BIO 111	Anatomy and Physiology - Normal Structure and Function	5
COM 101 or	Fundamentals of Speaking	
COM 102 or	Interpersonal Communication	
COM 200	Family Communication	3
ENG 111	Composition I	4
HSC 100	Basic Nursing Assistant Skills	4
	HSC 101 is strongly recommended but not required	0
HSC 131	CPR/AED for the Professional Rescuer and First Aid	1
MTH 160 or	Basic Statistics	
MTH 167	Math Applications for Health Science	3-4
PHL 244	Ethical and Legal Issues in Health Care	3
PSY 100	Introduction to Psychology	3

Pharmacy Technology Intent		(26 credits)
BIO 101	Concepts of Biology	4
	Computer Lit. Elective(s)	3
	Speech Elective(s)	3
ENG 111	Composition I	4
HSC 101	Healthcare Terminology	1
HSC 131	CPR/AED for the Professional Rescuer and First Aid	1
MTH 167 or	Math Applications for Health Science	
MTH 169	Intermediate Algebra	3-4
PHL 244	Ethical and Legal Issues in Health Care	3
PSY 100	Introduction to Psychology	3
PHT 106	Introduction to Pharmacy Technology	1

Physical Therapist Assistant Intent		(25 credits)
BIO 111	Anatomy and Physiology - Normal Structure and Function	5
COM 101 or	Fundamentals of Speaking	
COM 102	Interpersonal Communication	3
ENG 111	Composition I	4
HSC 101	Healthcare Terminology	1
HSC 131	CPR/AED for the Professional Rescuer and First Aid	1
MTH 160	Basic Statistics	4
PHL 244	Ethical and Legal Issues in Health Care	3
PSY 100	Introduction to Psychology	3
PTA 102	Introduction to Physical Therapy	1

Radiography Intent		(25 credits)
BIO 109 or	Essentials of Human Anatomy and Physiology	
BIO 111	Anatomy and Physiology - Normal Structure and Function	4-5
COM 101	Fundamentals of Speaking	3
ENG 111	Composition I	4
HSC 101	Healthcare Terminology	1
HSC 131	CPR/AED for the Professional Rescuer and First Aid	1
MTH 169	Intermediate Algebra	4

Program Information Report

PHL 244	Ethical and Legal Issues in Health Care	3
RAD 100	Introduction to Diagnostic Imaging	2
SOC 100	Principles of Sociology	3

Surgical Technology Intent		(29 credits)
BIO 111	Anatomy and Physiology - Normal Structure and Function	5
PHY 105	Conceptual Physics	4
	Computer Lit. Elective(s)	3
	Soc. Sci. Elective(s)	3
	Speech Elective(s)	3
	Writing Elective(s)	4
HSC 101	Healthcare Terminology	1
MTH 167	Math Applications for Health Science	3
PHL 244	Ethical and Legal Issues in Health Care	3

No Specialty		(26 credits)
BIO 101 or	Concepts of Biology	
BIO 102 or	Human Biology	
BIO 109 or	Essentials of Human Anatomy and Physiology	
BIO 111	Anatomy and Physiology - Normal Structure and Function	4-5
	Computer Lit. Elective(s)	3
	Speech Elective(s)	3
ENG 111	Composition I	4
HSC 101	Healthcare Terminology	1
HSC 131	CPR/AED for the Professional Rescuer and First Aid	1
HSC 100 or	Basic Nursing Assistant Skills	
PHT 106 or	Introduction to Pharmacy Technology	
PTA 102 or	Introduction to Physical Therapy	
RAD 100	Introduction to Diagnostic Imaging	1-4
MTH 160 or	Basic Statistics	
MTH 167 or	Math Applications for Health Science	
MTH 169	Intermediate Algebra	3-4
PHL 244	Ethical and Legal Issues in Health Care	3
PSY 100 or	Introduction to Psychology	
SOC 100	Principles of Sociology	3

Minimum Credits Required for the Program: 25

Notes:

CEM 101 Introductory Chemistry or high school chemistry is a required support course, with a grade of "C" or better.

Health Program Preparation

Program Information Report

Health Program Preparation (ASHPP)

Associate in Science Degree

Program Effective Term: Fall 2017

This program is designed for students who plan to pursue a health-related degree program at WCC or Bachelor of Science in Nursing (traditional or accelerated) or other health-related program at another college or four-year institution. The student will complete the common healthcare program prerequisites as outlined in the catalogs for local Michigan colleges.

Continuing Eligibility Requirements:
Minimum cumulative GPA of 2.8 or minimum GPA for intended health program

First Semester		(15 credits)
	Computer Lit. Elective(s)	3
ENG 111	Composition I	4
	Math General Education	4
	Nat. Sci. General Education**	4

Second Semester		(16 credits)
ENG 226	Composition II	3
	Speech General Education	3
	Soc. Sci. General Education	3
	Nat. Sci. General Science Elective (from second science area/discipline)**	4
	Area Studies Elective***	3

Third Semester		(11 credits)
	Arts/Human. General Education	3
HSC 101	Healthcare Terminology	1
	Area Studies Elective***	3
	Area Studies Elective***	3
	Elective****	1-4

Fourth Semester		(18 credits)
	Arts/Human. General Education	3
	Soc. Sci. General Education	3
	Area Studies Elective***	3
	Area Studies Elective***	3
	Area Studies Elective*** (to reach total of 60 credit hours for degree)	6

Minimum Credits Required for the Program: 60

Notes:

**Select a math general education course: MTH 160, MTH 167, MTH 169, MTH 176, or higher.*

***Select any two science electives from two different disciplines; one must be a lab. The second science elective must be chosen from the following list: BIO 101, BIO 102, BIO 103, BIO 104, BIO 109, BIO 111, BIO 161, BIO 162, BIO 208, BIO 212, BIO 237, CEM 105, CEM 111, CEM 122, CEM 140, or PHY 105.*

****Select courses as designated for your intended program and school of choice.*

*****Students may use one of the following: HSC 100, PHT 106, PTA 102, or RAD 100.*

Nursing

Prepare for a career in a variety of health care settings through these certificate and associate in applied science degree program.

Program Information Report

Nursing Assistant Skills Training (CCNAST)

Certificate of Completion

Program Effective Term: Fall 2017

This state certified four-five week program prepares students to work as a nursing assistant in a variety of health care settings such as nursing homes, hospitals and home care. Training takes place in the classroom, lab and clinical settings within the community. Upon completion of the program, students are eligible to apply for and take the Michigan Certified Nurse Aid (CNA) exam.

Program Admission Requirements:
Program admission requires a minimum age of 17 and Academic Reading and Writing Level 3. Students need to bring a paper photocopy of their driver's license or Michigan State ID to the mandatory orientation for the criminal background clearance check.

Major/Area Requirements		**(4 credits)**
HSC 100	Basic Nursing Assistant Skills	4

Minimum Credits Required for the Program: 4

Program Information Report

Nursing Transfer (EMU School of Nursing) (APNURE)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

This WCC honors program prepares students for a smooth transition into the third and fourth years of Eastern Michigan University's School of Nursing (EMU-SoN) BSN program. Individuals will receive a solid science foundation and begin taking nursing courses during the first two years at WCC. Students will not be eligible for registered nurse (RN) licensure until completion of the EMU-SoN program. WCC students will graduate with an Associate in Applied Science Degree.

For detailed information regarding admission to this health care program, please visit our Health Programs deartment page at http://health.wccnet.edu/.

Articulation:
Eastern Michigan University, BSN degree.

Copies of articulation agreements can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Applying for Admission to the Program:
A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page http://www.wccnet.edu/studentconnection/admissions/health-second-program/. Completed and signed applications must be submitted during the dates indicated on the application to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building. Students are encouraged to complete required support courses prior to beginning the program.

It is imperative that students meet with the Health Programs Counselor prior to enrolling in any courses that are considered part of this program to determine program eligibility. The program¿s curriculum plan has strict sequencing of its courses to meet continuing eligibility requirements to transfer. Students must meet with the Health Programs Counselor before they will be eligible to apply to the program.

Program Admission Requirements:
WCC uses a competitive admission process for high demand programs in health care. Each year, approximately 16 students are accepted to this program for a Fall semester start. This is a full-time program and no part-time option is available. There are multiple requirements that must be completed prior to submitting an application for admission. Applicants are required to meet all admission criteria and will be ranked based on a point system. The best qualified applicants will be selected for admission to the program. Details regarding WCC's Admission to High Demand Programs policy including priority levels are on WCC's Board of Trustees policy page: http://www.wccnet.edu/trustees/policies/2005/. Details regarding WCC's point scales that are used to calculate points are on WCC's Student Connection, Health and Second Tier Program, information page:
http://www.wccnet.edu/studentconnection/admissions/health-second-program/ .

Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change. Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program.

Requirements for application are:
1. Admission to WCC.
2. Program Application and Requirements Checklist.
3. Communication Acknowledgement Form.
4. Additional Information Form.
5. Signed Abilities Statement. WCC reserves the right to request, before or during the program, that students successfully demonstrate the specific physical and cognitive abilities related to the Nursing program.
6. Criminal background check clearance (refer to Information Release Authorization form in the admission packet).
7. Signed Mandatory Meeting Form. Students must meet with the Health Programs Counselor prior to enrolling in any courses that are considered part of this program to determine program eligibility.
8. Residency Verification.
9. Nursing Pre-Entrance Math Test with a minimum score of 80% within 2 attempts.
10. Program Prerequisite Courses. Students must meet requirements from either option A (high school) OR B (college) below:
Option A. Applicants meeting admission requirements through HIGH SCHOOL courses (requires cumulative high school GPA 3.4):
1. Academic Reading Level of 6 (college level)
2. Academic Writing Level of 6 (college level)
3. Academic Math Level of 3 or higher using SAT, ACT or ALEKS test scores
4. 1 year of High School Biology (including lab) or WCC BIO 101, BIO 102 or BIO 111 with a minimum grade of B/3.0.
5. 1 year of High School Chemistry (including lab) or WCC CEM 101, CEM 105 or CEM 111 with a minimum grade of B/3.0.

Program Information Report

6. Minimum cumulative High School GPA 3.4 (through Fall semester of senior year)

OR

Option B. Applicants meeting admission requirements through COLLEGE courses (cumulative high school GPA is below 3.4):
1. Academic Math Level of 3 or higher using SAT, ACT or ALEKS test scores or MATH 160 (or MTH 167 if passed before Winter 2017 semester) with a minimum grade of C/2.0. MTH 160 is required to graduate from this program.
2. 1 year of High School Biology (including lab) or WCC BIO 101, BIO 102 or BIO 111 with a minimum grade of B/3.0.
3. 1 year of High School Chemistry (including lab) or WCC CEM 101, CEM 105 or CEM 111 with a minimum grade of B/3.0.
4. Minimum cumulative College GPA of 3.4 (calculated on 12 college credits with at least 1 required science course). Only transcripts that provide an admission requirement course will be included in the calculation of the cumulative GPA. Academic courses within the program are recommended courses beyond required science course to meet 12 college credits.

Continuing Eligibility Requirements:
1. This transfer program is designed for full-time students.
2. Students are required to submit all health records completed between specific dates before enrolling in NUR 122 and annually update TB, BLS and HIPAA training. Prior to transfer, students may be required to have another physical examination and complete other health requirements specific to EMU-SoN.
3. Students must possess a current Certified Nurse Aide (CNA) certification through the State of Michigan prior to the NUR 102/106 course sequence.
4. Additional criminal background checks may be conducted at any time during the program. Students are required to have urine drug test through a vendor for a fee as well as additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by the clinical facilities. Failure to receive an acceptable drug test and/or criminal background/fingerprinting check at any time will result in dismissal from the program.
5. Students will be required to purchase special uniforms and supplies throughout the duration of the program.
6. Students are required to adhere to rules of the ANA Code of Ethics.
7. Students should be aware that the Michigan Board of Nursing may deny a license to an applicant who has been convicted of a crime or is addicted to drugs or alcohol.
8. Students are expected to maintain math competency in drug dosage calculations throughout the program.
9. Students must apply for graduation from WCC.
10. Students who are dismissed from WCC's program may not be eligible to reapply to the program.
11. Students must submit an application to EMU and meet all admission requirements to EMU in his/her final semester at WCC.
12. Students must pay for and take ATI exams according to course requirements prior to prior to transferring to EMU.
13. To be admitted to EMU-SoN, the student must:
a. A minimum of 2.0 GPA in all nursing (NUR) courses.
b. A minimum of 3.0 GPA in these science courses: BIO 111, BIO 237, CEM 140. Note: All science courses must be completed within 10 years of beginning the program at EMU.
c. A minimum of 2.0 GPA in SOC 100, PSY 100, ENG 111, MTH 160, COM elective, HSC 147 and BIO 212.
d. A cumulative GPA of 3.0 in CEM 140, ENG 111, PSY 100, BIO 111, HSC 147 and (ANT 201 or ANTH 135) whether completed at WCC or EMU.
e. An overall cumulative GPA of 3.0 at WCC.
14. Students must complete the BSN program in 6 years (starting with admission to the APNURE program at WCC). Students are only allowed to repeat a maximum of two (2) nursing (NUR) courses, which includes BIO 212. Further, a student may only repeat a failed nursing course one (1) time. Any failures in nursing courses taken prior to admission to EMU-SoN are counted toward dismissal and permanent dismissal decisions. Withdrawal from a nursing course twice is considered a failure.
15. Students must complete all other health requirements and criminal background checks per EMU-SoN policy.

Semester 1 (Fall)		**(16 credits)**
BIO 111	Anatomy and Physiology - Normal Structure and Function	5
CIS 100 or	Introduction to Computer Productivity Apps	
CIS 110	Introduction to Computer Information Systems	3
ENG 111	Composition I	4
NUR 122	Nursing as a Societal and Interpersonal Profession	4

Semester 2 (Winter)		**(15 credits)**
BIO 237	Microbiology	4
CEM 105	Fundamentals of Chemistry	4
HSC 147	Growth and Development	3
NUR 130	Health Promotion and Risk Reduction	4
	(Need CNA certification before taking NUR 102/NUR 106)	

Semester 3 (Spring/Summer)		**(10 credits)**
BIO 212	Pathophysiology: Alterations in Structure and Function	4
ENG 226	Composition II	3
PSY 100	Introduction to Psychology	3

Program Information Report

Semester 4 (Fall)		(17 credits)
CEM 140	Organic Biochemistry	4
MTH 160	Basic Statistics	4
Elective	Speech Elective(s)	3
NUR 115	Pharmacology	3
PHL 244	Ethical and Legal Issues in Health Care	3

Semester 5 (Winter)		(13 credits)
	Take a 2nd Course from the PSY discipline	3
NUR 102	Fundamentals of Nursing	2
NUR 106	Fundamentals of Nursing - Lab and Clinical Practice	4
NUR 222	Health Assessment Throughout the Lifespan	4

Minimum Credits Required for the Program: 71

Optional Courses

ANT 201*
Any MTA approved (Not PHL) Arts and Humanities course.*

Notes:

**Optional courses for receiving the MTA stamp prior to transfer and may be taken any time during Semesters 2 through 5.*

See WCC-EMU articulation agreement for a description of the additional credit hours that can be taken at WCC.

Program Information Report

Nursing, Registered (APNURS)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

The WCC Nursing Program prepares students for the National Council Licensure Examination for Registered Nurses (NCLEX-RN). Credit earned in the nursing program can transfer to a BSN completion program. Learning opportunities are in the classroom, simulation lab, clinical setting and community. Students will be prepared to succeed in a dynamic healthcare environment.

For more detailed information regarding the health care programs at WCC, please visit http://health.wccnet.edu .

Articulation:
Chamberlain College of Nursing, BSN degree;
Concordia University - Wisconsin, RN-BS-Nc degree;
Davenport University, BSN degree;
Eastern Michigan University, BSN degree;
Siena Heights University, BSN degree;
University of Michigan - Flint, BSN degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Applying for Admission to the Program:
A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page: http://www.wccnet.edu/studentconnection/admissions/health-second-program/ . Completed and signed applications must be submitted to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building during the dates indicated on the application.

Program Admission Requirements:
WCC uses a competitive admission process for high demand programs in health care. Each year, approximately 100 students are accepted to the program; please see the application packet for the number of seats available each term. There are multiple requirements that must be completed prior to submitting an application for admission. Applicants are required to meet all admission criteria and will be ranked based on a point system. The best qualified applicants will be selected for admission to the program. Student residency will be a weighted factor in the process. Details regarding WCC's Admission to High Demand Programs policy including priority levels are on WCC's Board of Trustees page: http://www.wccnet.edu/trustees/policies/2005/. Details regarding WCC's point scales that are used to calculate points are on WCC's Student Connection, Health and Second Tier Program, information page: http://www.wccnet.edu/studentconnection/admissions/health-second-program/ .

Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change. Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program.

Students are encouraged to completed required support courses prior to beginning the program. This is a full-time program; no part-time option is available.

Requirements for application are:
1. Admission to WCC.
2. Program prerequisite courses:
a. MTH 160 (or MTH 167 if passed Winter 2017 or earlier) or any math level 4 or higher course with a minimum grade of C/2.0. Students who have achieved a minimum Academic Math Level 3 may apply for admission but a required math course must be completed prior to starting the program.
b. BIO 111 with a minimum grade of B-/2.7.
c. COM 101, COM 102 or COM 200 with a minimum grade of C/2.0.
d. ENG 111 with a minimum grade C/2.0.
3. Current or expired Certified Nurse Aide (CNA) certification from the state of Michigan. Students with an Emergency Medical Technician (EMT) or Paramedic license should see the application packet for more information.
4. Minimum cumulative college GPA of 2.7. Only transcripts that provide an admission requirement course will be included in the calculation of the cumulative GPA.
5. Pass the current version of the Test of Essential Academic Skills, ATI-TEAS http://nursing.wccnet.edu/teas/, by achieving the following minimum scores:
Math proficiency - 60 percent or higher
Reading proficiency - 70 percent or higher
English and Language Usage proficiency - 60 percent or higher
Science proficiency - 45 percent or higher
If repeated TEAS test attempts are needed to meet required scores, the highest subject score from each attempt will be applied

towards admission requirements. Students are allowed an unlimited number of attempts.
6. Signed Abilities Statement. WCC reserves the right to request, before or during the program, that students successfully demonstrate the specific physical and cognitive abilities related to the Nursing program.
7. Criminal background check clearance (refer to Information Authorization form in the admission packet).
8. Residency verification.
9. Upon acceptance, students are required to submit health records, undergo drug screening and background checks.
10. Students should be aware that the Michigan Board of Nursing may deny a license to an applicant who has been convicted of a crime or is addicted to drugs or alcohol.

Continuing Eligibility Requirements:
-Program courses are sequential and complemented with appropriate support courses.
-All Registered Nursing (NUR) courses must be completed with a minimum grade of C+/2.3 and all support courses to the program must be completed with a minimum grade of C/2.0 unless otherwise specified.
-Students are required to adhere to rules of the American Nursing Association (ANA) Nursing Code of Ethics.
-Additional criminal background checks may be conducted at any time during the program. Students may be required to have drug testing as well as additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by specific clinical facilities. Failure to receive an acceptable drug test and/or criminal background/fingerprinting check at any time will result in dismissal from the program. Any cost, if indicated, for these checks is the responsibility of the student.
-Students should be aware that the Michigan Board of Nursing may deny a license to an applicant who has been convicted of a crime or is addicted to drugs or alcohol.
-Students in the Nursing program will be required to purchase special uniforms and supplies throughout the duration of the program.
-Students are required to submit health records annually while in the program.
-Students who are dismissed from the program may not be eligible to reapply to the program.

Major/Area Requirements		**(15 credits)**
BIO 111	Anatomy and Physiology - Normal Structure and Function	5
ENG 111	Composition I	4
COM 101 or	Fundamentals of Speaking	
COM 102 or	Interpersonal Communication	
COM 200	Family Communication	3
	MTH 160 (or MTH 167 if completed and passed Winter 2017 or earlier) or any math level 4 or higher course	3-5

First Semester		**(16 credits)**
BIO 147	Hospital Microbiology*	1
BIO 212	Pathophysiology: Alterations in Structure and Function	4
NUR 108	Nursing Concepts I	8
NUR 115	Pharmacology	3

Second Semester		**(12 credits)**
NUR 128	Nursing Concepts II	8
PSY 206	Life Span Developmental Psychology	4

Third Semester		**(11 credits)**
NUR 138	Nursing Concepts III	8
PHL 244	Ethical and Legal Issues in Health Care	3

Fourth Semester		**(8 credits)**
NUR 248	Nursing Concepts IV	5
NUR 258	Nursing Concepts Synthesis	3

Minimum Credits Required for the Program: 62

Notes:

**If you are planning to pursue a BSN degree, it is strongly recommended that you take BIO 237 Microbiology, in place of BIO 147. BIO 147 will not transfer to a four-year university.*

Other Options for Nursing and Health Sciences

Program Information Report

Medical Billing and Coding (CTMBC)

Certificate

Program Effective Term: Fall 2017

In this program students will develop comprehensive skills in classifying, coding, reporting, analyzing and managing medical data for both physician's office and large healthcare facility settings. Students will also learn how to code and process claims for reimbursement for multiple healthcare environments, and learn about pertinent laws, regulations, and compliance issues affecting healthcare information management and privacy. Upon completion of this program, students may be eligible to take the AHIMA CCA, CCS and CCS-P coding exams. This program is not an AAMA certification preparation program.

Program Admission Requirements:
BIO 109 or BIO 111 and HSC 124 with a B- minimum grade requirement.

Continuing Eligibility Requirements:
All courses must be completed with a GPA of 2.0 or better.

Major/Area Requirements		**(7 credits)**
BIO 109 or	Essentials of Human Anatomy and Physiology	
BIO 111	Anatomy and Physiology - Normal Structure and Function	4-5
HSC 124	Medical Terminology	3

First Semester		**(12 credits)**
MBC 185	Medical Computer Skills and Electronic Health Records	3
MBC 205	Introductory ICD Coding	3
MBC 215	Introductory Procedural Coding	3
MBC 223	Medical Office Procedures	3

Second Semester		**(10 credits)**
MBC 210	Intermediate/Advanced ICD Coding	3
MBC 220	Intermediate/Advanced Procedural Coding	3
MBC 224	Medical Insurance and Reimbursement	4

Third Semester		**(3 credits)**
MBC 250	Medical Coding Practicum	3

Minimum Credits Required for the Program: 32

Pharmacy Technology

Work with a professional pharmacist to meet the medication and customer service needs of individuals in a variety of settings.

Program Information Report

Pharmacy Technology (CTPHAR)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation**

This certificate program prepares students for pharmacy technician entry-level positions in hospitals, retail stores and other specialty areas of pharmacy practice, where they work under the supervision of a registered pharmacist. Students learn to blend a high attention to detail with patient care. This is a full-time program and courses are required to be completed in sequence.

For detailed information regarding admission to this health care program, please visit our Health Programs deartment page at http://health.wccnet.edu/.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Applying for Admission to the Program:
A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page http://www.wccnet.edu/studentconnection/admissions/health-second-program/. Completed and signed applications must be submitted during the dates indicated on the application to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building.

Program Admission Requirements:
Washtenaw Community College uses a competitive admission process for high demand programs in health care. Each year, approximately 24 students are accepted to the program for a Fall semester start. This is a full-time program. There are multiple requirements that must be completed prior to submitting an application for admission. For detailed information regarding admission to this health care program, please visit our Health Care website at http://health.wccnet.edu .

Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change. Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program. Details regarding WCC's Admission to High Demand Programs policy including priority levels are on WCC's Board of Trustees policy page: http://www.wccnet.edu/trustees/policies/2005/. Details regarding WCC's point scales that are used to calculate points are on WCC's Student Connection, Health and Second Tier Program, information page: http://www.wccnet.edu/studentconnection/admissions/health-second-program/ .

Requirements for application are:
1. Admission to WCC.
2. Program prerequisite courses:
a. MTH 167 or MTH 169 or any Academic Math Level 4 or higher with a minimum grade of C+/2.3.
b. BIO 101 or higher level college Biology course (including lab) with a minimum grade of C+/2.3.
c. ENG 111 with a minimum grade of C+/2.3.
d. Computer and information literacy (approved general education course) with a minimum grade of C+/2.3.
3. Minimum cumulative college GPA of 2.3.
4. Verification of high school diploma or GED.
5. Signed Abilities Statement. WCC reserves the right to request, before and during the program, that students successfully demonstrate specific physical and cognitive abilities related to the program.
6. Criminal background check clearance (refer to the Information Release Authorization form in the admission packet).
7. Residency verification.

Continuing Eligibility Requirements:
1. Additional criminal background checks may be conducted at any time during the program. Students may be required to have drug testing as well as additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by specific clinical facilities. Failure to receive an acceptable drug test and/or criminal background/fingerprinting check at any time, will result in dismissal from the program.
-Students who have a felony conviction record are not allowed to continue in the program or sit for the National Pharmacy Technician Certification Exam administered by the Pharmacy Technician Certification Board.
2. The requirements below must be submitted by November 1. Detailed information including any required forms will be provided to the student at the mandatory orientation.
-Submit a completed Report of Medical History form (physical examination by licensed physician)
-Submit proof of a negative TB skin test
-Submit proof of a current vaccination record (you may be asked to update vaccines)
-Submit proof of a current Flu vaccine
-Submit proof of current health insurance (health insurance must remain active throughout the entire program)

Program Information Report

-Submit proof of negative drug screen
3. Students must complete any other health requirements as designated by the clinical sites.
4. WTMC students must possess a valid high school diploma or GED by the end of the program.
5. Students must be at least 18 years of age to graduate from this program.
6. Demonstration of proficiency in the English language prior to placement in PHT 198. See the Abilities Statement in the admissions packet for further details.
7. All Pharmacy Technology (PHT) and support courses to the program must be completed with a minimum grade of C/2.0.
8. Students who are dismissed from the program may not be eligible to reapply to the program.

Major/Area Requirements		**(14 credits)**
BIO 101 or	Concepts of Biology	
	Any BIO 101 or Higher Level College Biology (including Lab) Course	4
Elective	Computer Lit. Elective(s)	3
ENG 111	Composition I	4
MTH 167 or	Math Applications for Health Science	
MTH 169 or	Intermediate Algebra	
	Any Math Level 4 or Higher Course	3-4

Semester 1 (Fall)		**(9 credits)**
HSC 101 or	Healthcare Terminology	
HSC 124	Medical Terminology	1-3
PHT 100	Introduction to Pharmacy and Health Care Systems	4
PHT 103	Pharmaceutical Calculations	2
PHT 145	Prescription Processing and Compounding	2

Semester 2 (Winter)		**(8 credits)**
PHT 101	Pharmacology for Pharmacy Technicians	4
PHT 198	Pharmacy Experience	4

Minimum Credits Required for the Program: 31

Physical Therapist Assistant

Work with a physical therapist to provide selected services to patients with a wide variety of conditions.

Program Information Report

Physical Therapist Assistant (APPTA)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

Physical Therapist Assistants (PTAs) are skilled and licensed health care providers who work under the direction and supervision of physical therapists. PTAs perform components of physical therapy plan of care developed by a supervising physical therapist. PTAs assist physical therapists in providing services that help improve mobility, relieve pain, and prevent or limit permanent disabilities for people of all ages who have medical problems or other health-related concerns. Duties of the PTA include assisting the physical therapist in implementing treatment programs, providing interventions, and communicating with the physical therapist and other members of the health care team regarding the client's response to treatment and interventions. Clients may include accident victims, individuals with disabling conditions, and those requiring instruction in health promotion and wellness activities. Upon successful completion of this program, the student will receive an Associate in Applied Science Degree in Physical Therapist Assistant and is eligible to apply for Michigan licensure and take the National Physical Therapy Examination administered by the Federation of State Boards of Physical Therapy (FSBPT).

Articulation:
Eastern Michigan University, BS degree;
Davenport University, BBA degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Applying for Admission to the Program:
A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page http://www.wccnet.edu/studentconnection/admissions/health-second-program/. Completed and signed applications must be submitted during the dates indicated on the application to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building.

Program Admission Requirements:
Washtenaw Community College uses a competitive admission process for high demand programs in health care. Each year, approximately 20 students are accepted to the program for a Fall semester start. There are multiple requirements that must be completed prior to submitting an application for admission. This is a full-time program; no part-time option is available. For detailed information regarding admission to this health care program, please visit our Health Care website at http://health.wccnet.edu.

Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change. Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program. Details regarding WCC's Admission to High Demand Programs policy including priority levels are on WCC's Board of Trustees policy page: http://www.wccnet.edu/trustees/policies/2005/. Details regarding WCC's point scales that are used to calculate points are on WCC's Student Connection, Health and Second Tier Program, information page: http://www.wccnet.edu/studentconnection/admissions/health-second-program/ .

Requirements for application are:
1. Admission to WCC.
2. Program prerequisite courses:
a. Academic Math Level 3 or MTH 160 or MTH 167 or MTH 169 or any Academic Math Level 4 or higher with a minimum grade of C/2.0.
b. HSC 101 with a minimum grade of C/2.0.
c. BIO 111 with a minimum grade of B-/2.7.
d. ENG 111 with a minimum grade of C/2.0
3. Minimum cumulative program prerequisite GPA of 2.8.
4. Minimum cumulative college GPA of 2.8.
5. Signed Abilities Statement (refer to the form in the admision packet). WCC reserves the right to request, before and during the program, that students successfully demonstrate specific physical and cognitive abilities related to the program.
6. Criminal background check clearance (refer to the Information Release Authorization form in the admission packet).
7. 20 hours of observations in a physical therapy setting with a minimum of three (3) hours in at least three (3) different types of physical therapy settings (refer to the Clincial Observation form in the admission packet).
8. Residency verification.

Continuing Eligibility Requirements:
1. Additional criminal background checks may be conducted at any time during the program. Students may be required to have drug testing as well as additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by specific clinical facilities. Failure to receive an acceptable drug test and/or criminal background/fingerprinting check at any time, will result in dismissal from the program.
2. Students will be required to submit health records annually while in the program and must complete any other health requirements as designated by the clinical sites.

3. Students will be required to purchase special uniforms and supplies throughout the duration of the program.
4. Students are required to demonstrate that they have maintained competency in all skills taught throughout their progression through the program. Failure to demonstrate continued competency will result in dismissal from the program.
5. Students must have reliable transportation to clinical education sites which may require a commute of up to one hour.
6. All Physical Therapist Assistant (PTA) courses and support courses to the program must be completed with a minimum grade of C/2.0.
7. Students who are dismissed from the program may not be eligible to reapply to the program.

Major/Area Requirements		**(14 credits)**
BIO 111	Anatomy and Physiology - Normal Structure and Function	5
ENG 111	Composition I	4
HSC 101	Healthcare Terminology	1
MTH 160	Basic Statistics*	4

Semester 1 (Fall)		**(15 credits)**
COM 101 or	Fundamentals of Speaking*	
COM 102	Interpersonal Communication*	3
HSC 147	Growth and Development*	3
PTA 100	Fundamentals of Physical Therapy	2
PTA 150	Therapeutic Procedures I	3
PTA 180	Clinical Kinesiology	4

Semester 2 (Winter)		**(16 credits)**
PSY 100	Introduction to Psychology*	3
PTA 160	Therapeutic Procedures II	2
PTA 195	Introduction to Disease	2
PTA 200	Therapeutic Modalities	4
PTA 220	Therapeutic Exercise I	4
PTA 230	Clinical Education I	1

Semester 3 (Fall)		**(14 credits)**
Elective	Computer Lit. Elective(s)*	3
PHL 244	Ethical and Legal Issues in Health Care*	3
PTA 198	Soft Tissue Management	2
PTA 225	Therapeutic Exercise II	4
PTA 240	Clinical Education II	2

Semester 4 (Winter)		**(6 credits)**
PTA 250	Clinical Education III	5
PTA 280	Clinical Concepts	1

Minimum Credits Required for the Program: 65

Notes:

**These courses may be taken before admission to the Physical Therapist Assistant program. (It is strongly recommended that students complete the general education courses before entering the Physical Therapist Assistant program.) Students may transfer or substitute equivalent general education courses or a healthcare terminology course required for the Physical Therapist Assistant program.*

Radiography

Prepare for a career as a radiographer, operating medical imaging equipment.

Program Information Report

Radiography (APRAD)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

This program prepares students for a career in diagnostic radiology as a radiographer. A radiographer is a technologist who produces images of the human body to aid physicians in the diagnosis and treatment of injuries and diseases. The program curriculum includes a series of courses offered in conjunction with individualized laboratory work and an extensive clinical experience in local hospitals. Upon completion of the program, the student will receive an Associate in Applied Science Degree*** in Radiography and is eligible to take the national registry examination administered by the American Registry of Radiologic Technologists (ARRT). Radiographers work in a variety of settings including hospitals, clinics, doctors' offices and industry.

The program is accredited by the Joint Review Committee on Education in Radiologic Technology
http://www.jrcert.org/
20 N. Wacker Drive, Suite 2850, Chicago, IL 60606-2901, (312)704-5300.

For more detailed information regarding the Radiography Program, please visit the radiography web page at http://health.wccnet.edu/radiography/.

Articulation:
Davenport University, Bachelor degree;
Eastern Michigan University, several BS degrees;
University of Michigan-Flint, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Applying for Admission to the Program:
A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page http://www.wccnet.edu/studentconnection/admissions/health-second-program/ . Completed and signed applications must be submitted during the dates indicated on the application to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building.

Program Admission Requirements:
Washtenaw Community College uses a competitive admission process for high demand programs in health care. Each year, approximately 32 students are accepted to the program for a Spring/Summer semester start. There are multiple requirements that must be completed prior to submitting an application for admission. This is a full-time program; no part-time option is available. For detailed information regarding admission to this health care program, please visit our Health Care website at http://health.wccnet.edu.

Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change. Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program. Details regarding WCC's Admission to High Demand Programs policy including priority levels are on WCC's Board of Trustees policy page: http://www.wccnet.edu/trustees/policies/2005/. Details regarding WCC's point scales that are used to calculate points are on WCC's Student Connection, Health and Second Tier Program, information page: http://www.wccnet.edu/studentconnection/admissions/health-second-program/ .

Requirements for application are:
1. Admission to WCC.
2. Program prerequisite courses:
a. MTH 125 or MTH 160 or MTH 176 (or MTH 167 or MTH 169 if passed Fall 2017 or earlier) or any Academic Math Level 4 or higher level course with a minimum grade of C+/2.3.
b. HSC 101 or HSC 124 with a minimum grade of B-/2.7.
c. BIO 109 or BIO 111 with a minimum grade of C+/2.3.
d. RAD 100 with a minimum grade of B-/2.7.
3. Minimum cumulative college GPA of 2.3 (total cumulative GPA of all schools that provide a required program prerequisite course will be included in the calculation).
4. Signed Abilities Statement (refer to the admission packet). WCC reserves the right to request, before and during the program, that students successfully demonstrate specific physical and cognitive abilities related to this program.
5. Criminal background check clearance (refer to the Information Release Authorization form in the admission packet).
6. Residency verification.

Continuing Eligibility Requirements:
1. Additional criminal background checks may be conducted at any time during the program. Students may be required to have drug testing as well as additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by specific clinical facilities. Failure to receive an acceptable drug test and/or criminal background/fingerprinting check at any time, will

Program Information Report

result in dismissal from the program unless the student has documentation from ARRT of their eligibility to take the certification exam.
2. Students will be required to attend a hospital orientation session prior to starting their clinical rotation.
3. Students will be required to submit health records annually while in the program and must complete any other health requirements as designated by the clinical sites.
4. Students will be required to purchase special uniforms and supplies throughout the duration of the program.
5. Students are required to demonstrate that they have maintained competency in all skills taught throughout their progression through the program. Failure to demonstrate continued competency will result in dismissal from the program.
6. All Radiography (RAD) courses must be completed with a minimum grade of C-/1.7 and all support courses to the program must be completed with a minimum grade of C/2.0 unless otherwise specified.
7. Students must have reliable transportation to clinical education sites which may require a commute of up to one hour.
8. Students who are dismissed from the program may not be eligible to reapply to the program.

Major/Area Requirements		**(10 credits)**
BIO 109 or	Essentials of Human Anatomy and Physiology*	
BIO 111	Anatomy and Physiology - Normal Structure and Function*	4-5
HSC 101 or	Healthcare Terminology*	
HSC 124	Medical Terminology*	1-3
MTH 125 or	Everyday College Math*	
MTH 160 or	Basic Statistics*	
MTH 176 or	College Algebra*	
	(MTH 167 or MTH 169 if passed Fall 2017 or earlier) or Any Math Level 4 or Higher Course*	3-4
RAD 100	Introduction to Diagnostic Imaging*	2

Semester 1 (Spring/Summer)		**(8 credits)**
ENG 111	Composition I**	4
RAD 101	Methods in Patient Care	1
RAD 103	Medical Professionalism in Clinical Radiography	1
RAD 111	Fundamentals of Radiography	2

Semester 2 (Fall)		**(12 credits)**
COM 101 or	Fundamentals of Speaking**	
COM 102	Interpersonal Communication**	3
RAD 110	Clinical Education	2
RAD 112	Radiographic Positioning I	2
RAD 124	Principles of Radiographic Exposure	2
RAD 125	Radiographic Procedures and Related Anatomy	3

Semester 3 (Winter)		**(9 credits)**
	Social and Behavioral Science Elective (PSY 100 or SOC 100)**	3
RAD 120	Clinical Education	2
RAD 123	Radiographic Positioning II	2
RAD 215	Radiography of the Skull	2

Semester 4 (Spring/Summer)		**(6 credits)**
RAD 150	Clinical Education	3
RAD 218	Radiation Biology and Protection	3

Semester 5 (Fall)		**(11 credits)**
RAD 190	Physical Foundations of Radiography	3
RAD 217	Clinical Education	3
RAD 222	Pharmacology in Diagnostic Imaging	2
RAD 235	Pathology for Radiographers	3

Semester 6 (Winter)		**(10 credits)**
PHL 244	Ethical and Legal Issues in Health Care	3
RAD 223	Sectional Anatomy	2
RAD 225	Clinical Education	3
RAD 232	Digital Imaging in Radiography	2

Semester 7 (Spring/Summer)		**(2 credits)**
RAD 240	Clinical Education	2

Minimum Credits Required for the Program: 68

Program Information Report

Notes:

**These courses must be taken before being admitted to the program.*
***These courses may be taken before admissions to the Radiography program. (It is strongly advised that students complete the general education courses before entering the Radiography program.) Students can transfer or substitute equivalent general education courses required for the Radiography program. Contact the program advisor for approval.*
****Students who are planning to transfer to a 4-year univeristy should follow the Michigan Transfer Agreement (MTA). See an academic advisor for more information.*

Program Information Report

Computed Tomography (CT) (CPCTOM)

Post-Associate Certificate

Program Effective Term: Fall 2017

The Computed Tomography (CT) program is a post-associate advanced certificate program that is designed for registered radiologic technologists (ARRT), radiation therapists (ARRT), and nuclear medicine technologists (ARRT or NMTCB). This program offers the didactic and clinical experience that will provide students with the knowledge and skills that are required to become an entry-level computed tomography technologist. The curriculum is based on the recommended American Society of Radiologic Technology (ASRT) computed tomography guidelines. Upon successful completion of the Computed Tomography program, students are eligible to take the ARRT post-primary certification examination in computed tomography.

Applying for Admission to the Program:
A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page http://www.wccnet.edu/studentconnection/admissions/health-second-program/. Completed and signed applications must be submitted during the dates indicated on the application to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building.

WCC Radiography students who are currently enrolled in the final year of their program and expected to graduate in the Spring/Summer semester are given priority and may submit an incomplete program application during the application window. It is strongly recommended that WCC Radiography graduates schedule and sit for their ARRT Certification Examination within the two weeks following the completion of their program. Verification of all pending admission prerequisite requirements must be submitted within the deadline to be eligible to begin the program if accepted.

Program Admission Requirements:
Washtenaw Community College uses a competitive admission process for high demand programs in health care. Each year, approximately 12 students are accepted to the program for a Fall semester start. There are multiple requirements that must be completed prior to submitting an application for admission. For detailed information regarding admission to this health care program, please visit our Health Care website at http://health.wccnet.edu

Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change. Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program. Details regarding WCC's Admission to High Demand Programs policy including priority levels are on WCC's Board of Trustees policy page: http://www.wccnet.edu/trustees/policies/2005/. Details regarding WCC's point scales that are used to calculate points are on WCC's Student Connection, Health and Second Tier Program, information page: http://www.wccnet.edu/studentconnection/admissions/health-second-program/ .

Requirements for application are:
1. Admission to WCC.
2. Program prerequisite course:
a. Cross-sectional anatomy course from a JRCERT accredited college or hospital-based radiogrpahy program or RAD 223. Minimum grade of B/3.0.
3. Graduate of one (1) of the accredited programs below:
-JRCERT
-JRCNMT
-Expected Spring/Summer graduate from WCC's Radiography program
4. Current American Registry of Radiologic Technologists (ARRT) or Nuclear Medicine Technology Certification Board (NMTCB) registration card showing primary certification in one (1) of the following areas:
-Radiography (R)
-Nuclear Medicine (N)
-Radiation Therapy (T)
-Certified Nuclear Medicine Technologist (CNMT)
-Expected Spring/Summer graduate from WCC's Radiography program
5. Minimum cumulative college GPA of 3.0.
6. Signed Abilities Statement. WCC reserves the right to request, before and during the program, that students successfully demonstrate specific physical and cognitive abilities related to the program.
7. Criminal background check clearance (refer to the Information Release Authorization form in the admission packet).
8. Residency verification.

Continuing Eligibility Requirements:
1. Additional criminal background checks may be conducted at any time during the program. Students may be required to have drug testing as well as additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by specific clinical facilities. Failure to receive an acceptable drug test and/or criminal background/fingerprinting check at any time will result in dismissal from the program.

Program Information Report

2. Students will be required to attend a hospital orientation session prior to starting their clinical rotation.
3. Students will be required to submit health records annually while in the program and must complete any other health requirements as designated by the clinical sites.
4. Students will be required to purchase special uniforms and supplies throughout the duration of the program.
5. Students are required to demonstrate that they have maintained competency in all skills taught throughout their progression through the program. Failure to demonstrate continued competency will result in dismissal from the program.
6. All Computed Tomography (CT) courses must be completed with a minimum grade of C/2.0.
7. Students must have reliable transportation to clinical education sites, which may require a commute of up to on hour.
8. Students who are dismissed from the program may not be eligible to reapply to the program.

Semester 1 (Fall)		**(8 credits)**
RAD 259	Introduction to Computed Tomography (CT) Instrumentation and Protocols	1
RAD 261	Patient Care in Computed Tomography (CT)	1
RAD 263	Practical Computed Tomography (CT) Imaging	3
RAD 265	Computed Tomography (CT) Clinical Education I	3

Semester 2 (Winter)		**(8 credits)**
RAD 262	Principles of Computed Tomography (CT)	2
RAD 266	Advanced Computed Tomography (CT) Imaging	3
RAD 267	Computed Tomography (CT) Clinical Education II	3

Minimum Credits Required for the Program: 16

Program Information Report

Magnetic Resonance Imaging (MRI) (CPMRIP)

Post-Associate Certificate

Program Effective Term: Fall 2017

The Magnetic Resonance Imaging (MRI) Program is a post-associate advanced certificate program that is designed for registered radiologic technologists (ARRT), radiation therapists (ARRT), Sonographers (ARRT or ARDMS) and nuclear medicine technologists (ARRT or NMTCB). This program offers the didactic and clinical experience that will provide students with the knowledge, skills, and attitudes that are required to become an entry-level magnetic resonance imaging technologist. The curriculum is based on the recommended American Society of Radiologic Technology (ASRT) magnetic resonance imaging guidelines. Upon successful completion of the MRI program, students are eligible to take the ARRT post-primary certification examination in magnetic resonance imaging.

Applying for Admission to the Program:
A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page http://www.wccnet.edu/studentconnection/admissions/health-second-program/ . Completed and signed applications must be submitted during the dates indicated on the application to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building.

WCC Radiography students who are currently enrolled in the final year of their program and expected to graduate in the Spring/Summer semester are given priority and may submit an incomplete program application during the application window. It is strongly recommended that WCC Radiography graduates schedule and sit for their ARRT Certification Examination within the two weeks following the completion of their program. Verification of all pending admission prerequisite requirements must be submitted within the deadline to be eligible to begin the program if accepted.

Program Admission Requirements:
Washtenaw Community College uses a competitive admission process for high demand programs in health care. Each year, approximately 12 students are accepted to the program for a Winter semester start. There are multiple requirements that must be completed prior to submitting an application for admission. For detailed information regarding admission to this health care program, please visit our Health Care website at http://health.wccnet.edu

Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change. Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program. Details regarding WCC's Admission to High Demand Programs policy including priority levels are on WCC's Board of Trustees policy page: http://www.wccnet.edu/trustees/policies/2005/. Details regarding WCC's point scales that are used to calculate points are on WCC's Student Connection, Health and Second Tier Program, information page: http://www.wccnet.edu/studentconnection/admissions/health-second-program/ .

Requirements for application are:
1. Admission to WCC.
2. Program prerequisite course:
a. Cross-sectional anatomy course from a JRCERT accredited college or hospital-based radiography program or RAD 223. Minimum grade of B/3.0.
3. Graduate of one (1) of the accredited programs below:
-JRCERT
-JRCNMT
-JRC-DMS
-JRC-CVT
-CAAHEP
-Expected to graduate from WCC's Radiography program in the Spring/Summer semester
4. Current American Registry of Radiologic Technologists (ARRT), American Registry for Diagnostic Medical Sonography (ARDMS) or Nuclear Medicine Technology Certification Board (NMTCB) registration card showing primary certification in one (1) of the following areas:
-Radiography (R)
-Sonography
-Nuclear Medicine (N)
-Radiation Therapy (T)
-Expected to graduate from WCC's Radiography program in the Spring/Summer semester
5. Minimum cumulative college GPA of 3.0.
6. Signed Abilities Statement. WCC reserves the right to request, before and during the program, that students successfully demonstrate specific physical and cognitive abilities related to the program.
7. Criminal background check clearance (refer to the Information Release Authorization form in the admission packet).
8. Residency verification.

Continuing Eligibility Requirements:

Program Information Report

1. Additional criminal background checks may be conducted at any time during the program. Students may be required to have drug testing as well as additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by specific clinical facilities. Failure to receive an acceptable drug test and/or criminal background/fingerprinting check at any time, will result in dismissal from the program.
2. Students must complete any other health requirements as designated by the clinical sites.
3. All Magnetic Resonance Imaging (MRI) courses must be completed with a minimum grade of C/2.0.
4. Students who are dismissed from the program may not be eligible to reapply to the program.

Semester 1 (Fall)		**(11 credits)**
MRI 101	MRI Safety	2
MRI 110	MRI Physics I	3
MRI 120	MRI Procedures I	3
MRI 125	MRI Clinical Education I	3

Semester 2 (Winter)		**(10 credits)**
MRI 130	MRI Physics II	3
MRI 135	MRI Quality Assurance	1
MRI 140	MRI Procedures II	3
MRI 145	MRI Clinical Education II	3

Semester 3 (Spring/Summer)		**(8 credits)**
MRI 160	MRI Advanced Imaging Procedures	3
MRI 162	MRI Pulsed Sequence, Imaging Options, and Parameters	2
MRI 165	MRI Clinical Education III	3

Minimum Credits Required for the Program: 29

Program Information Report

Mammography (CPMAM)

Post-Associate Certificate

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

The Mammography program is a post-associate advanced certificate that is designed for ARRT registered radiologic technologists. This program prepares students to perform screening and diagnostic mammography procedures using dedicated mammography equipment. The curriculum is based on the recommended American Society of Radiologic Technology (ASRT) mammography guidelines and includes both didactic and clinical education. Upon successful completion of the Mammography program, students are eligible to take the ARRT post-primary certification examination in mammography. In an effort to accommodate working radiologic technologists, this program will be offered in a blended-format.

Applying for Admission to the Program:
A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page http://www.wccnet.edu/studentconnection/admissions/health-second-program/. Completed and signed applications must be submitted during the dates indicated on the application to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building.

Program Admission Requirements:
Washtenaw Community College uses a competitive admission process for high demand programs in health care. Each year, approximately 12 students are accepted to the program for a Winter semester start. There are multiple requirements that must be completed prior to submitting an application for admission. For detailed information regarding admission to this health care program, please visit our Health Care website at http://health.wccnet.edu .

Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change. Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program. Details regarding WCC's Admission to High Demand Programs policy including priority levels are on WCC's Board of Trustees policy page: http://www.wccnet.edu/trustees/policies/2005/. Details regarding WCC's point scales that are used to calculate points are on WCC's Student Connection, Health and Second Tier Program, information page: http://www.wccnet.edu/studentconnection/admissions/health-second-program/ .

Requirements for application are:
1. Admission to WCC.
2. Graduate of a Joint Review Committee on Education in Radiologic Technology (JRCERT) accredited program.
3. Current American Registry of Radiologic Technologists (ARRT) registration card showing primary certification in radiography.
4. Minimum cumulative college GPA of 2.7.
5. Signed Abilities Statement. WCC reserves the right to request, before and during the program, that students successfully demonstrate specific physical and cognitive abilities related to this program.
6. Criminal background check clearance (refer to the Information Release Authorization form in the admission packet).
7. Residency verification.

Continuing Eligibility Requirements:
1. Additional criminal background checks may be conducted at any time during the program. Students may be required to have drug testing as well as additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by specific clinical facilities. Failure to receive an acceptable drug test and/or criminal background/fingerprinting check at any time, will result in dismissal from the program.
2. Students must complete any other health requirements as designated by the clinical sites.
3. All Mammography (RAD) courses must be completed with a minimum grade of C/2.0.
4. Students who are dismissed from the program may not be eligible to reapply to the program.

Semester 1 (Fall)		**(9 credits)**
RAD 270	Principles of Mammography	3
RAD 271	Mammography Quality Control (QC)	3
RAD 273	Mammography Clinical Education	3

Minimum Credits Required for the Program: 9

Surgical Technology

Prepare for a career in Surgical Technology, working in operating rooms and surgical suites.

Program Information Report

Surgical Technology (APST)

Associate in Applied Science Degree

Program Effective Term: Fall 2017

A surgical technologist (ST) serves the patient's interest primarily by providing assistance to the surgeon. The surgical technologist's primary task during an operative procedure is to anticipate the perioperative needs of the surgeon and surgical patient. Students in this program must be well grounded in the basic sciences, especially anatomy, microbiology, and pathophysiology. The surgical technologist contributes to global patient care by serving as a team member who monitors the surgical environment.

Applying for Admission to the Program:
A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page http://www.wccnet.edu/studentconnection/admissions/health-second-program/ . Completed and signed applications must be submitted during the dates indicated on the application to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building.

Program Admission Requirements:
Washtenaw Community College uses a competitive admission process for high demand programs in health care. Each year, approximately 20 students are accepted to the program for a Fall semester start. There are multiple requirements that must be completed prior to submitting an application for admission. This is a full-time program; no part-time option is available. For detailed information regarding admission to this health care program, please visit our Health Care website at http://health.wccnet.edu .

Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change. Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program. Details regarding WCC's Admission to High Demand Programs policy including priority levels are on WCC's Board of Trustees policy page: http://www.wccnet.edu/trustees/policies/2005/. Details regarding WCC's point scales that are used to calculate points are on WCC's Student Connection, Health and Second Tier Program, information page: http://www.wccnet.edu/studentconnection/admissions/health-second-program/ .

Requirements for application are:
1. Admission to WCC.
2. Program prerequisite courses:
a. MTH 125 or MTH 160 or MTH 176 or any Academic Math Level 4 or higher level course with a minimum grade of C/2.0. Students with an Academic Math Level 3 may apply.
b. HSC 101 or HSC 124 with a minimum grade of B-/2.7.
c. BIO 111 with a minimum grade of B-/2.7.
3. Minimum cumulative college GPA of 2.7 (total cumulative GPA of all schools that provide a required program prerequisite course will be included in the calculation).
4. Signed Abilities Statement (in the admissions packet). WCC reserves the right to request, before and during the program, that students successfully demonstrate specific physical and cognitive abilities related to this program.
5. Criminal background check clearance (refer to the Information Release Authorization form in the admission packet).
6. Residency verification.

Continuing Eligibility Requirements:
1. Additional criminal background checks may be conducted at any time during the program. Students may be required to have drug testing as well as additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by specific clinical facilities. Failure to receive an acceptable drug test and/or criminal background/fingerprinting check at any time, will result in dismissal from the program.
2. Students must complete any other health requirements as designated by the clinical sites.
3. All Surgical Technology (SUR) courses must be completed with a minimum grade of C+/2.3 and all support courses to the program must be completed with a minimum grade of C/2.0.
4. Students who are dismissed from the program may not be eligible to reapply to the program.

Major/Area Requirements		(9 credits)
BIO 111	Anatomy and Physiology - Normal Structure and Function	5
HSC 101 or	Healthcare Terminology	
HSC 124	Medical Terminology	1-3
MTH 125 or	Everyday College Math	
MTH 160 or	Basic Statistics	
MTH 176 or	College Algebra	
	Any Academic Math Level 4 or higher Math Course	3-4

Program Information Report

Semester 1 (Fall)		(16 credits)
SUR 101	Introduction to Sterile Processing	6
BIO 237	Microbiology	4
ENG 111 or	Composition I	
ENG 226	Composition II	3-4
	Speech Elective(s)	3

Semester 2 (Winter)		(12 credits)
SUR 110	Introduction to Surgical Technology/Surgical Patient	5
SUR 170	Surgical Pharmacology	2
SUR 180	Surgical Procedures I	3
SUR 181	Surgical Procedures I Lab	2

Semester 3 (Spring/Summer)		(2 credits)
SUR 270	Biomedical Science and Minimally Invasive Surgery	2

Semester 4 (Fall)		(12 credits)
SUR 210	Surgical Procedures II	3
SUR 211	Surgical Procedures II Lab	2
SUR 231	Clinical Education I	1
	Computer Lit. Elective(s)	3
	Soc. Sci. Elective(s)	3

Semester 5 (Winter)		(10 credits)
SUR 241	Clinical Education II	4
SUR 250	Surgical Technology Seminar	3
PHL 244	Ethical and Legal Issues in Health Care	3

Minimum Credits Required for the Program: 61

School of Professional Communication

We live in an age of communication. The School of Professional Communication is here to serve those who want to develop skills in radio broadcasting, technical communication or in print and online journalism. Select one of our programs and prepare yourself for an entry-level job or for transfer to a four-year institution.

Washtenaw Community College offers programs at two levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

The next level, an Associate in Arts is available for some programs. For some career fields, it is possible to earn a certificate and an Associate in Arts degree in the same field. In these cases, the credit hours from the certificate can be applied to the credit hours needed for the Associate in Arts degree.

Communication

Whether your goal is broadcasting, journalism or technical communication, these programs provide a foundation for entry-level jobs or to undertake advanced studies at a four-year institution.

Technical Communication (CTTC)

Certificate

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

As a fast-track program for career changers or a foundational program for first time professionals, this program provides the knowledge and skills necessary for writing end-user documentation such as printed manuals, online help systems and screencast training modules. Using tools of the technical communication profession, the student will develop skill in audience analysis; tutorial, procedure and reference guide writing; project management; document design; and usability testing. Designed to provide the student with practical and theoretical principles of technical communication, the program prepares students for employment in a wide variety of opportunities in the field. To this end, students will also learn how to conduct a formal job search and create professional portfolios to better compete for jobs. Those without previous college experience can use this certificate to seek work as interns and in co-op positions in technical communication while pursuing the Associate in Arts Degree in Technical Communication.

Program Admission Requirements:
Basic computer literacy.

Major/Area Requirements		(20 credits)
ENG 107	Technical Writing I*	3
ENG 208	Technical Writing II	3
ENG 209	Technical Writing III	3
ENG 218	Technical Writing IV	3
ENG 245	Job Search Success Seminar	2
Elective	Select one GDT course from the following: GDT 104, GDT 106, GDT 107 or GDT 108	3-4
Elective	Select one WEB course from the following: WEB 110, WEB 113 or WEB 115	3-4

Minimum Credits Required for the Program: **20**

Notes:

**Students with equivalent coursework/experience are encouraged to contact the program advisor for appropriate course placement.*

Program Information Report

Broadcast Arts (AABCA)

Associate in Arts Degree

Program Effective Term: Fall 2017

High Wage Occupation

The Broadcast Arts program provides training in radio and gives students basic knowledge of radio production, programming, and announcing. The program emphasizes communication skills needed for jobs in a variety of fields, including advertising, public relations, broadcast journalism and program production, and prepares students for transfer to a four-year institution.

Articulation:
Eastern Michigan University; BA and BS degrees; and
Lawrence Technological University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

First Semester		**(16 credits)**
COM 130	Introduction to Mass Communication	3
COM 155	Scriptwriting for Broadcast Arts	3
ENG 111	Composition I	4
	Soc. Sci. Elective(s)	3
	Math Elective(s)	3-4

Second Semester		**(15 credits)**
COM 142	Oral Interpretation of Literature	3
COM 160	Voice and Articulation	3
ENG 226	Composition II	3
	Computer Lit. Elective(s)	3
	Arts/Human. Elective(s)	3

Third Semester		**(15 credits)**
COM 101	Fundamentals of Speaking	3
COM 150	Introduction to Radio Production	3
COM 183 or	Persuasion	
COM 210	Nonverbal Communication	3
	Nat. Sci. Elective(s)*	3-4
	Soc. Sci. Elective(s)	3

Fourth Semester		**(12 credits)**
COM 170	Advanced Radio Production	3
COM 240	Broadcast Arts Internship	3
	Elective Any 100-level or above course to reach a minimum of 60 credits.**	3
	Arts/Human. Elective(s)	3

Fifth Semester		**(3 credits)**
COM 235	Broadcast Arts Practicum	3

Minimum Credits Required for the Program: 61

Notes:

**Students who plan to transfer to a four-year college should select a lab-based, MACRAO approved science course.*
***Additional communication courses not already used in the program are recommended.*

Program Information Report

Technical Communication (AATCD)

Associate in Arts Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

In this program, students explore the technical communication process in detail and develop skills in audience analysis, project management, technical writing and editing, document design and usability testing. Using tools of the technical communication profession, students prepare content for print and online delivery, develop screencast training modules, learn how to conduct a formal job search and create professional portfolios to showcase their skills.

The Technical Communication Associate in Arts degree is designed for students transferring to a four-year university and seeking a Bachelor of Arts degree. The General Education requirements fulfill both Washtenaw Community College's requirements and the MTA Transfer requirements.

Articulation:
Eastern Michigan University, BA or BS degree;
Madonna University, BA degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Basic computer literacy.

First Semester		(14 credits)
COM 101	Fundamentals of Speaking	3
ENG 111	Composition I	4
Elective	Math Elective(s)	4
Elective	Soc. Sci. Elective(s)	3

Second Semester		(12 credits)
ENG 107	Technical Writing I	3
ENG 226	Composition II	3
Elective	GDT Elective Select one course from the following: GDT 104, GDT 106, GDT 107 or GDT 108	3-4
Elective	Soc. Sci. Elective(s)*	3

Third Semester		(15 credits)
ENG 208	Technical Writing II	3
Elective	Arts/Human. Elective(s)*	3
Elective	Nat. Sci. Elective(s)	3
Elective	Restricted Elective(s)**	3
Elective	WEB Elective Select one course from the following: WEB 110, WEB 113 or WEB 115	3-4

Fourth Semester		(15 credits)
ENG 209	Technical Writing III	3
ENG 245	Job Search Success Seminar	2
Elective	Arts/Human. Elective(s)*	3
Elective	Nat. Sci. Elective(s)*	4
Elective	Restricted Elective(s)**	3-4

Fifth Semester		(4 credits)
ENG 218	Technical Writing IV	3
	Elective to reach a minimum 60 credits	1-0

Minimum Credits Required for the Program: 60

Notes:

**If your course(s) exceeds the recommended credit hours, you will need to reduce the number of credits in the restricted electives. Students who plan to transfer to a 4-year university are encouraged to meet with the Technical Communication program advisor to select appropriate general education courses.*
***JRN 210 is strongly recommended. Students must meet with the Technical Communication program advisor to select additional*

elective courses.

Professional Writing

Whether your goal is journalism or technical writing, these programs provide a foundation for beginning writing or to undertake advanced studies at a four-year institution.

Program Information Report

Journalism (AAJOUR)

Associate in Arts Degree

Program Effective Term: Fall 2017

High Skill Occupation High Wage Occupation

This program prepares students to transfer to a four-year institution and major in journalism. Four specialty courses provide a solid background in journalism-related content. Students in the program will gain invaluable experience in areas of a career in journalism.

Articulation:
Eastern Michigan University, BS degree;
Madonna University, BA degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

First Semester		**(17 credits)**
COM 130	Introduction to Mass Communication	3
ENG 111	Composition I	4
JRN 111	Introduction to Journalism	3
	Computer Lit. Elective(s)	3
	Math Elective(s)	4

Second Semester		**(13 credits)**
COM 101	Fundamentals of Speaking	3
ENG 226	Composition II	3
JRN 210	Introduction to Copy Editing**	3
Elective	Nat. Sci. 1 Elective(s)*	4

Third Semester		**(15 credits)**
JRN 217	Introduction to Feature Writing**	3
Elective	Arts/Human. 1 Elective(s)	3
Elective	Nat. Sci. 2 Elective(s)*	3
Elective	Soc. Sci. 1 Elective(s)	3
	Restricted Elective(s) 1 ENG 107 or Any 100-level or above course from COM, GDT, WEB, PHO, PLS or VID	3

Fourth Semester		**(15 credits)**
JRN 220	Introduction to Digital Journalism**	3
Elective	Arts/Human. 2 Elective(s)	3
	Soc. Sci. 2 Elective(s)	3
	Restricted Elective(s) 2 ENG 107 or Any 100-level or above course from COM, GDT, WEB, PHO, PLS or VID	3
	Elective(s) Any 100-level or above course to bring the total credits to a minimum of 60.	3

Minimum Credits Required for the Program: 60

Notes:

**Transfer students should select MTA-approved Natural Science courses from two disciplines, including one with laboratory experiences; Arts and Humanities courses from two disciplines; and Social and Behavioral Science courses from two disciplines.*
***JRN 217 is offered in Fall only; JRN 210 and JRN 220 are offered in Winter only.*

Transfer and University Parallel Programs

If your goal is to continue your education toward a baccalaureate degree, then transfer and university parallel programs is the track for you. Complete the first two years of study in a supportive environment with small classes and personal attention.

Before beginning any transfer program, a student should consult with an academic advisor or counselor to obtain a program articulation agreement or a transfer guide. Early in the program, the student should contact an undergraduate advisor at the transfer college for specific admission and curriculum requirements and, if available, an unofficial transfer-credit evaluation.

Copies of articulation agreements and transfer guides are available in the Counseling Office on the second floor of the Student Center Building. Computers with access to the Internet Web sites of four-year colleges and universities are also available there.

Apprenticeship and Occupational Studies

These individualized programs utilize earned certificates, apprenticeships and trade-related credits tailored to the needs of the student. The Occupational Studies degree offers the flexibility to combine certain certificate programs with general education courses and electives to develop an individualized Associate in Applied Science degree.

Occupational Studies/EMU Technology Management BS (TR01O1OST)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

The Technology Management degree program at Eastern Michigan University is designed for transfer students with an associate of applied science degree. The interdisciplinary curriculum provides the necessary foundation to meet the changing needs of management in a variety of fields. Students should check with an advisor for information on transferring.

Articulation:
Eastern Michigan University, Technology Management BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(94 credits)
	Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement. See the articulation for suggested occupational areas.	94
	Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 94

Automation

Are you looking for a career as a hydraulic technician or an introduction to manufacturing engineering? Consider the field of

automation.

Mechatronics Multiple Tech/Wayne State Multiple Engineering Tech Degrees BS (TR11M1METR)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

This program prepares students for transfer to a bachelor's degree in the engineering technology areas at Wayne State University where they will further improve their skills. Students should check with an advisor for information on transferring.

Articulation:
Wayne State University, Bachelor of Science in Electrical/Electronic Engineering Technology (BS-EET), Electromechanical Engineering Technology (BS-EMT) and Mechanical Engineering Technology (BS-MCT)

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(87 credits)
	Complete a maximum of eighty-seven credits at Washtenaw Community College as outlined on the Articulation Agreement	87
	Complete a minimum of forty-one credits at Wayne State University as outlined on the Articulation Agreement	0

Minimum Credits Required for the Program: 87

Business

Choose one or more areas in the field of business as you prepare for your future.

Program Information Report

Business/Ferris Business Admin. Professional Track BS (TR09B1BAS)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

This program prepares students for transfer to a bachelor of science in business administration professional track degree program at Ferris State University, where they will further improve their communication and interpersonal skills while developing a specialty in accounting, economics, finance, management, or some other aspect of business. Students should check with an advisor for information on transferring.

Articulation:
Ferris State University, Business Administration Professional Track BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(90 credits)
	Complete a maximum of ninety credits at Washtenaw Community College as outlined on the Articulation Agreement	90
	Complete a minimum of thirty credits at Ferris State University as outlined on the Articulation Agreement	0

Minimum Credits Required for the Program: 90

Program Information Report

Business/Madonna Business Administration BS (TR10B1BAS)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

This program prepares students for transfer to a bachelor's of science in business administration degree at Madonna University, where they will further improve their communication and interpersonal skills while developing a specialty in accounting, economics, finance, management, or some other aspect of business. Students should check with an advisor for information on transferring.

Articulation:
Madonna University, Business Administration BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(89 credits)
	Complete a maximum of eighty-nine credits at Washtenaw Community College as outlined on the Articulation Agreement	89
	Complete a minimum of thirty-one credits at Madonna University as outlined on the Articulation Agreement	0

Minimum Credits Required for the Program: 89

Business Office Systems

Whether you are just starting out in an office or advancing to a high-level administrative or executive assistant position, these programs can help you achieve your goals.

Program Information Report

Business Office Admin-Law Option/EMU Paralegal Studies BS (TR01B2BOAD)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This program prepares students for transfer to a bachelor of science degree program at Eastern Michigan University. Students will learn the necessary skills to become a paralegal.

Articulation:
Eastern Michigan University, Paralegal Studies (Legal Assisting), BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(82 credits)
	Complete a maximum of eighty-two credits at Washtenaw Community College as outlined on the Articulation Agreement.	82
	Complete a minimum of forty-two credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **82**

Program Information Report

Business Office Admin-Medical Admin Option/EMU Health Administration BS (TR01B3BOAD)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

This program prepares students for transfer to a bachelor of science degree program at Eastern Michigan University. It is designed to prepare those seeking a career in the administrative sector of the health care delivery system in any of its forms. Students should check with an advisor for information on transferring.

Articulation:
Eastern Michigan University, Health Administration BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(91 credits)
	Complete a maximum of ninety-one credits at Washtenaw Community College as outlined on the Articulation Agreement.	91
	Complete a minimum of thirty-three credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 91

Business Transfer

Designed for students who intent to transfer into a four-year school program in business.

Program Information Report

Business (AABAS)

Associate in Arts Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

This program prepares students for transfer to a bachelor's of business administration degree program at a four-year college or university, where they will further improve their communication and interpersonal skills while developing a specialty in accounting, economics, finance, management, or some other aspect of business. The program was specifically designed to transfer to Eastern Michigan University. Check with an advisor for information on transferring to other colleges. See the footnotes for transferring to the University of Michigan.

Articulation:
Cleary University, BS or BBA degree;
Davenport University, Bachelor degree;
Eastern Michigan University, BBA degree*;
Ferris State University, BS degree;
Kaplan University, BS degree;
Madonna University, BS degree;
Northwood University, BBA degree;
University of Michigan-Flint, BA degree;
Walsh College, BA or BBA degree
Wayne State University, BS degree.

*A minimum cumulative GPA of 2.5 is required for admission to EMU's College of Business. All courses must be completed with a minimum grade of "C" (2.0) to transfer. Contact the College of Business Undergraduate Advising Office at EMU early to have transfer credits reviewed and unofficially evaluated. (734-487-2344 or email cob_undergraduate@emich.edu)

This program can meet the Michigan Transfer Agreement (MTA). Students must have their transcripts certified for MTA completion by the WCC Student Records Office.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Students must have:
- Academic Math Level of 3 to enroll in MTH 125 and MTH 160
- Academic Math Level of 4 to enroll in MTH 176 or MTH 181

First Semester		(17 credits)
ACC 111	Principles of Accounting I	3
BMG 140	Introduction to Business	3
CIS 110	Introduction to Computer Information Systems	3
ENG 111	Composition I	4
MTH 125 or	Everyday College Math	
MTH 160 or	Basic Statistics	
MTH 176 or	College Algebra	
MTH 181	Mathematical Analysis I	4

Second Semester		(13 credits)
ACC 122	Principles of Accounting II	3
BMG 207	Business Communication	3
ENG 226	Composition II	3
	Nat. Sci. Elective(s)*	4

Third Semester		(15 credits)
BMG 111	Business Law I	3
BMG 265	Business Statistics	3
COM 101	Fundamentals of Speaking	3
ECO 211	Principles of Economics I	3
	Soc. Sci. Elective(s)**	3

Fourth Semester		(15 credits)
ECO 222	Principles of Economics II	3

Program Information Report

Arts/Human. Elective(s)***	3
Arts and Humanities Elective(s) ***	3
Nat. Sci. Elective(s)*****	3-4
Complete a BMG or CIS course as needed to bring the program total to a minimum of 60 credits.****	3

Minimum Credits Required for the Program: 60

Notes:

**Students transferring to a four-year institution should choose a lab-based, Michigan Transfer Agreement (MTA)-approved science course.*
***See the MTA list to make course selections from any discipline except ECO.*
****See the EMU Diverse World Requirement list. A course in logic or ethics (PHL 205 or PHL 250) is strongly recommended. Students must complete Arts and Humanities courses from two different disciplines to meet MTA.*
*****See an advisor to choose courses that transfer to and meet the requirements of the program and college to which you are transferring.*
******Students following the Michigan Transfer Agreement (MTA) should complete a second natural science course in a second discipline.*

University of Michigan School of Business does not accept business or accounting courses from community colleges. If you wish to transfer to a business major at UM, please see a counselor.

Program Information Report

Business/Davenport Business Professional Studies BBA (TR02B1BAS)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

This program prepares students for transfer to a bachelor's of business administration degree program at Davenport University, where they will further improve their communication and interpersonal skills while developing a specialty in accounting, economics, finance, management, or some other aspect of business. Students should check with an advisor for information on transferring.

Articulation:
Davenport University, Business Professional Studies BBA

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(86 credits)
	Complete a maximum of eighty-six credits at Washtenaw Community College as outlined on the Articulation Agreement.	86
	Complete a minimum of thirty-four credits at Davenport University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 86

Program Information Report

Business/EMU Bachelor of Business Administration BBA (TR01B1BAS)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program prepares students for transfer to a bachelor's of business administration degree program at a Eastern Michigan University, where they will further improve their communication and interpersonal skills while developing a specialty in accounting, economics, finance, management, or some other aspect of business. Students should check with an advisor for information on transferring.

Articulation:
Eastern Michigan University, Business Major (approved) BBA

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(82 credits)
	Complete a maximum of eighty-two credits at Washtenaw Community College as outlined on the Articulation Agreement.	82
	Complete a minimum of forty-two credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **82**

Program Information Report

Business/Northwood Management BBA (TR04B1BAS)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

This program prepares students for transfer to a bachelor's of business administration degree program at Northwood University, where they will further improve their communication and interpersonal skills while developing a specialty in accounting, economics, finance, management, or some other aspect of business. Students should check with an advisor for information on transferring.

Articulation:
Northwood University, Business Administration BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges

Requirements		(92 credits)
	Complete a maximum of ninety-two credits at Washtenaw Community College as outlined on the Articulation Agreement.	92
	Complete a minimum of thirty-one credits at Northwood University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 92

Child Care Professionals

Whether you are looking to care for children in a home-based center or a professional or school-based setting, these programs can prepare you for an entry-level position as a childcare professional.

Program Information Report

Child Care Professional/Madonna Child Development BS (TR10H1CCP)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program prepares students for transfer to a bachelor's of child development degree program at Madonna University, where they will further their training working with children under age twelve. Students should check with an advisor for information on transferring.

Articulation:
Madonna University, Child Development BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(84 credits)
	Complete a maximum of eighty-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	84
	Complete a minimum of thirty-six credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **84**

Communication

Whether your goal is broadcasting, journalism or technical communication, these programs provide a foundation for entry-level jobs or to undertake advanced studies at a four-year institution.

Program Information Report

Broadcast Arts/EMU Communication Major BS (TR01F1BCA)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

This program prepares students for transfer to a bachelor of arts or science degree program at Eastern Michigan University, where they will further improve their communication and interpersonal skills in personal, professoinal and public contexts. Students should check with an advisor for information on transferring.

Articulation:
Eastern Michigan University, Communication Major, BA or BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(94 credits)
	Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
	Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 94

Computer Science and Information Systems

Interested in a bachelor's degree in computer science or (business) information systems? This area provides the foundation you need to be successful.

Program Information Report

Computer Science: Programming in Java (ASCSPJ)

Associate in Science Degree

Program Effective Term: Fall 2017

High Skill Occupation High Wage Occupation

This program prepares students to transfer to Eastern Michigan University to complete a bachelor's degree in Computer Science or Applied Computer Science and to pursue careers in computer science fields such as computer systems programming and analysis, software development and maintenance, and applications programming.

Articulation:
Davenport University, BS degree;
Eastern Michigan University, BS degree;
Kaplan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Students need an Academic Math Level of 4 or higher to enroll in MTH 176 and CPS 161.

First Semester		(14 credits)
CPS 161	An Introduction to Programming with Java	4
Elective	MTH 176 or higher 4 credit math course	4
	Arts/Human. 1 Elective(s)	3
	Nat. Sci. 1 Elective(s)	3-4

Second Semester		(15 credits)
ENG 111	Composition I	4
CPS 261	Advanced Java Concepts	4
CPS 276	Web Programming Using Apache, MySQL, and PHP	4
	Soc. Sci. 1 Elective(s)	3

Third Semester		(17 credits)
COM 225	Intercultural Communication*	3
CPS 278	Java Server Programming	4
	Nat. Sci. 2 Elective(s)	4
	Soc. Sci. 2 Elective(s)	3
CIS 282	Database Principles and Application	3

Fourth Semester		(14 credits)
CPS 251	Android Programming Using Java	4
CPS 298	Professional Team Programming	4
ENG 226	Composition II	3
	Arts/Human. 2 Elective(s)	3

Minimum Credits Required for the Program: 60

Notes:

**Satisfies EMU's Diverse World Requirement.*

See an advisor to choose courses that meet the requirements of the program to which you are transferring.

Program Information Report

Information Systems: Programming in C++ (ASISPC)

Associate in Science Degree

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This program prepares students to transfer to complete a bachelor's degree in Business Administration with a major in Computer Information Systems. Undergraduates and graduates of CIS programs are prepared to create and maintain information systems for organizations, manage information systems projects, and develop strategies for effective use of enterprise information resources.

Articulation:
Davenport University, BS degree;
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Students need an Academic Math Level of 4 to enroll in MTH 176.

First Semester		(14 credits)
COM 225	Intercultural Communication*	3
CPS 171	Introduction to Programming with C++	4
ENG 111	Composition I	4
	Computer Lit. Elective(s)	3

Second Semester		(18 credits)
CIS 121	Linux/UNIX I: Fundamentals	4
CPS 271	Object Features of C++	4
ENG 226	Composition II	3
	MTH 176 or higher 4 credit math course	4
	Arts/Human. 1 Elective(s)	3

Third Semester		(15 credits)
CPS 276	Web Programming Using Apache, MySQL, and PHP	4
	Nat. Sci. Elective(s)**	4
	Soc. Sci. 1 Elective(s)***	3
	Electives Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 282, CPS 161, CPS 251, CPS 261, CPS 278	4

Fourth Semester		(17 credits)
CPS 272	Data Structures with C++	4
	Arts/Human. 2 Elective(s)	3
	Soc. Sci. 2 Elective(s)***	3
	Students following the Michigan Transfer Agreement (MTA) should complete a second natural science course. MACRAO students should complete a Soc. Sci. 3 Elective(s).***	3-4
	Electives Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 282, CPS 161, CPS 251, CPS 261, CPS 278	4

Minimum Credits Required for the Program: **64**

Notes:

**Satisfies EMU's Diverse World Requirement*
***Students transferring to a four-year institution should choose a lab-based, MTA-approved science course.*
See an advisor to choose courses that meet the requirements of the program to which you are transferring.
****Choose three courses from at least two Social and Behavioral Science disciplines.*

This course sequencing aligns with students starting in the Fall semester. Students starting the Winter semester should switch the order in which they take CPS 272 and CPS 276.

Program Information Report

Computer Sci: Prog in Java/Davenport Computer Info. Systems: Programming BS (TR02C1CSPJ)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program is designed for transfer to Davenport University. Students can obtain a Bachelor of Science degree in Computer Information Systems. Students will develop a broad range of computer programming skills. Students will learn to work with corporate management and subject matter experts to analyze information needs and determine ways in which computer systems can be used to meet those needs. Students should check with an advisor for information on transferring.

Articulation:
Davenport University, Computer Information Systems (Programming) BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(64 credits)
	Complete a maximum of sixty-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	64
	Complete a minimum of sixty-nine credits at Davenport University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **64**

Program Information Report

Computer Science: Program in Java/EMU Computer Science BS (TR01C4CSPJ)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program prepares students to transfer to Eastern Michigan University to complete a bachelor's degree in Computer Science or Applied Computer Science and to pursue careers in computer science fields such as computer systems programming and analysis, software development and maintenance, and applications programming.

Articulation:
Eastern Michigan University, Computer Science BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(80 credits)
	Complete a maximum of eighty credits at Washtenaw Community College as outlined on the Articulation Agreement.	80
	Complete a minimum of forty-six credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **80**

Program Information Report

Info. Systems: Prog in C++/Davenport Computer Info. Systems: Programming BS (TR02I1ISPC)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

This program is designed for transfer to Davenport University. Students can obtain a Bachelor of Science degree in Computer Information Systems. Students will develop a broad range of computer programming skills. Students will learn to work with corporate management and subject matter experts to analyze information needs and determine ways in which computer systems can be used to meet those needs. Students should check with an advisor for information on transferring.

Articulation:
Davenport University, Computer Information Systems (Programming) BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(60 credits)
	Complete a maximum of sixty credits at Washtenaw Community College as outlined on the Articulation Agreement.	60
	Complete a minimum of seventy-five credits at Davenport University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 60

Program Information Report

Information Systems: Program in C++/EMU Computer Information Systems BBA (TR01I1ISPC)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

This program prepares students to transfer to Eastern Michigan University to complete a BBA degree in Computer Information Systems. Undergraduates and graduates of CIS programs are prepared to create and maintain information systems for organizations, manage information systems projects, and develop strategies for effective use of enterprise information resources. Students should check with an advisor for information on transferring.

Articulation:
Eastern Michigan University, Computer Information Systems BBA

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(82 credits)
	Complete a maximum of eighty-two credits at Washtenaw Community College as outlined on the Articulation Agreement.	82
	Complete a minimum of forty-two credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 82

Computer Security

Program Information Report

Computer Systems Security/EMU Information Assurance BS (TR01C5CSS)

Associate Degree/3+1 Transfer **INACTIVE**

Program Effective Term: Fall 2013

This program prepares students to transfer to a bachelor of science program in Information Assurance. Students will learn about the latest security technologies and will examine the issues of IT security awareness, data confidentiality, systems and network security planning, network security organization, and the legal and ethical issues associated with computer systems security. Students will also execute a vulnerability analysis of a network and will design security systems and implement a security strategy for a network.

Articulation:
EMU Information Assurance BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges

Requirements		(91 credits)
	Complete a maximum of ninety-one credits at Washtenaw Community College as outlined on the Articulation Agreement.	91
	Complete a minimum of thirty-three credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 91

Construction Management

Prepare for work in the construction management or property maintenance industries through the completion of these programs.

Program Information Report

Construction Management/EMU Construction Management BS (TR01S1CMG)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

The program prepares students to transfer into a bachelor's of construction management degree at Eastern Michigan University. Students who transfer will continue developing the skills needed to work for construction contractors, engineering/architectural firms, public agencies, or trade associations in positions such as office engineer, field engineer, safety engineer, project engineer, foreman, estimator, scheduler, expeditor, quality control engineer, inspector, material representative or independent contractor. Requirements vary by college, so students should obtain the current curriculum for the college to which they are transferring.

Articulation:
Eastern Michigan University, Construction Management BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(84 credits)
	Complete a maximum of eighty-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	84
	Complete a minimum of forty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 84

Criminal Justice and Pre-Law

Considering a career in the justice system? This program prepares you for further study in these specialized fields.

Program Information Report

Criminal Justice (AACJ)

Associate in Arts Degree

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This program helps prepare students for jobs in the courts and in corrections (such as probation and parole) as well as state and federal law enforcement. Most, but not all, of these jobs require at least a bachelor's degree and students can complete their first 3 years at WCC before transferring to other four-year schools such as EMU for their final year.

Articulation:
Davenport University, Bachelor degree;
Eastern Michigan University, BA degree and several BS degrees*;
Kaplan University, BS degree;
Madonna University, BS degree.

*For those interested in pursuing a degree in Criminology and Criminal Justice from EMU, students may take 30 additional credit hours at WCC and transfer a total of 94 credits to EMU towards a Bachelor's Degree (124 hours). The following additional classes are recommended: ANT 201, SOC 207, SOC 250, and PSY 257.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Students must have an Academic Math Level of 3 to enroll in MTH 160. One year of high school algebra is recommended.

First Semester		**(16 credits)**
CJT 100	Introduction to Criminal Justice	3
CJT 111 or	Police/Community Relations	
CJT 154 or	Everyday Law I: Law and Civil Liberties	
CJT 155	Everyday Law II: Civil Law, Liabilities and You	3
COM 102	Interpersonal Communication	3
ENG 111	Composition I	4
Elective	Arts/Human. Elective(s)*	3

Second Semester		**(16 credits)**
CJT 120	Criminal Justice Ethics	3
CJT 160	Criminal Justice Constitutional Law	3
CJT 209	Criminal Law	3
ENG 226	Composition II	3
MTH 160	Basic Statistics	4

Third Semester		**(16 credits)**
CJT 208	Criminal Evidence and Procedure	3
CJT 223	Juvenile Justice	3
PSY 100	Introduction to Psychology	3
Elective	Nat. Sci. Elective(s) with lab*	4
Elective	Computer Lit. Elective(s)	3

Fourth Semester		**(18 credits)**
ANT 201	Introduction to Cultural Anthropology	3
CJT 224	Criminal Investigation	3
CJT 170 or	Domestic and International Terrorism	
CJT 225	Seminar in Criminal Justice	3
SOC 100	Principles of Sociology	3
Elective	Arts/Human. Elective(s)*	3
Elective	Nat. Sci. Elective(s) from a different discipline*	3-4

Minimum Credits Required for the Program: **66**

Notes:

**See the Michigan Transfer Agreement (MTA) list to make course selections. Students who follow this program will have to do MTA or they can follow an earlier catalog.*

Program Information Report

Paralegal Studies/Pre-Law (AAPSPL)

Associate in Arts Degree

Program Effective Term: Fall 2017

This program prepares students for entry-level positions or further study in the field of law. Entry-level paralegal positions are available in legal offices such as corporate, prosecuting and public defense in addition to some courts. Under the supervision of an attorney, paralegals may assist with research, court filings, documentation and depositions. Students who wish to continue their education may continue on to a bachelor's degree or a Juris Doctorate degree.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

First Semester		(16 credits)
CJT 130	Introduction to Paralegal Studies	3
CJT 154	Everyday Law I: Law and Civil Liberties	3
COM 102	Interpersonal Communication	3
ENG 111	Composition I	4
PHL 123	Critical Thinking	3

Second Semester		(15 credits)
BOS 206	Personal Management Application and Internet Resources	2
CJT 120	Criminal Justice Ethics	3
ENG 226	Composition II	3
MTH 160	Basic Statistics	4
SOC 100	Principles of Sociology	3

Third Semester		(16 credits)
ACC 111	Principles of Accounting I	3
CJT 208	Criminal Evidence and Procedure	3
HST 200	Michigan History	3
	Nat. Sci. Elective(s)*	4
	Computer Lit. Elective(s)	3

Fourth Semester		(15 credits)
BMG 111	Business Law I	3
CJT 155	Everyday Law II: Civil Law, Liabilities and You	3
CJT 209	Criminal Law	3
MUS 147	Arts, Media and Entertainment Law	3
PHL 250	Logic	3

Minimum Credits Required for the Program: 62

Notes:

**Students wishing to transfer to EMU should follow the articulation guide.*

***Students are encouraged to complete the MACRAO or MTA requirement noted below:*
Students who wish to complete MACRAO should select another social science course.
Students who wish to complete MTA should select another natural science course.

Program Information Report

Criminal Justice/EMU Criminology and Criminal Justice BS (TR01C1CJ)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program helps prepare students for jobs in the courts and in corrections (such as probation and parole) as well as state and federal law enforcement. Most, but not all, of these jobs require at least a bachelor's degree and students can complete their first three years at WCC before transferring to Eastern Michigan University.

Articulation:
Eastern Michigan University, Criminology and Criminal Justice BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(94 credits)
	Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
	Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

Program Information Report

Criminal Justice/EMU Public Safety Administration BS (TR01C2CJ)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program helps prepare students for jobs in the courts and in corrections (such as probation and parole) as well as state and federal law enforcement. Most, but not all, of these jobs require at least a bachelor's degree and students can complete their first three years at WCC before transferring Eastern Michigan University.

Articulation:
Eastern Michigan University, Public Safety Administration BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(94 credits)
	Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
	Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

Program Information Report

Criminal Justice/EMU Technology Management BS (TR01C3CJ)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

The technology management program is designed for transfer students with an associate of applied science degree. The interdisciplinary curriculum provides the necessary foundation to meet the changing needs of management in a variety of fields including criminal justice. Students should check with an advisor for information on transferring.

Articulation:
Eastern Michigan University, Technology Management BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(94 credits)
	Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
	Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

Program Information Report

Criminal Justice/Madonna Criminal Justice BS (TR10C1CJ)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

This program helps prepare students for jobs in the courts and in corrections (such as probation and parole) as well as state and federal law enforcement. Most, but not all, of these jobs require at least a bachelor's degree and students can complete their first three years at WCC before transferring to Madonna University. Students should check with an advisor for information on transferring.

Articulation:
Madonna University, Criminal Justice BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(89 credits)
	Complete a maximum of eighty-nine credits at Washtenaw Community College as outlined on the Articulation Agreement	89
	Complete a minimum of thirty-one credits at Madonna University as outlined on the Articulation Agreement	0

Minimum Credits Required for the Program: 89

Culinary Arts and Hospitality Management

Develop the skills necessary for a career in the hospitality industry.

Program Information Report

Culinary and Hospitality Mgmt/EMU Hotel & Restaurant Management BS (TR01U1CULD)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program helps prepare students for jobs in the area of culinary arts and hospitality management. Some jobs require at least a bachelor's degree and students can complete their first three years at WCC before transferring to Eastern Michigan University.

Articulation:
Eastern Michigan University, Hotel & Restaurant Management BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(88 credits)
	Complete a maximum of eighty-eight credits at Washtenaw Community College as outlined on the Articulation Agreement.	88
	Complete a minimum of forty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **88**

Education

These programs are designed to help prepare students for further study so that they may pursue becoming a certified teacher in the state of Michigan.

Program Information Report

Early Childhood Education (AAECED)

Associate in Arts Degree

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation**

The program prepares students to transfer into an early childhood education program at a four-year college or university. The first two years of instruction in a bachelor's degree program in an early childhood education major is covered. The program includes the general education courses that prepare students for the state-mandated basic skills tests for teachers in the State of Michigan. Requirements vary by college, so students should obtain the current curriculum for the college to which they are transferring.

Articulation:
Eastern Michigan University, BS degree

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Academic Math Level of 3 is required to enroll in MTH 148.

Continuing Eligibility Requirements:
GPA of 2.0 or higher

First Semester		**(16 credits)**
CCP 101	Child Development	3
COM 101	Fundamentals of Speaking	3
ENG 111	Composition I	4
GEO 101	World Regional Geography	3
PSY 100	Introduction to Psychology	3

Second Semester		**(16 credits)**
CCP 220	Development and Care of Infants and Toddlers	3
CCP 251	Education of the Young Child with Exceptionalities	3
CIS 100	Introduction to Computer Productivity Apps	3
ENG 226	Composition II	3
MTH 148	Functional Math for Elementary Teachers I	4

Third Semester		**(15 credits)**
ENG 240	Children's Literature	3
HSC 131	CPR/AED for the Professional Rescuer and First Aid	1
HST 201	United States History to 1877	3
MTH 149	Functional Math for Elementary Teachers II	4
CEM 102 or	Chemistry for Elementary Teachers*	
GLG 202 or	Earth Science for Elementary Teachers*	
PHY 100	Physics for Elementary Teachers*	4

Fourth Semester		**(13 credits)**
CCP 200	Working with Families in a Diverse Society	3
CCP 204	The Developing Professional in Early Childhood Education	2
CCP 205	Practicum for the Developing ECE Professional	1
PSY 220	Human Development and Learning	4
	Arts/Human. Elective(s)	3
	Elective Science for Elementary School Teachers (optional)*	0-4

Minimum Credits Required for the Program: **60**

Notes:

**All three could be taken at WCC to transfer to EMU: CEM 102, GLG 202 and PHY 100.*

Program Information Report

Elementary Education (AAELEM)

Associate in Arts Degree

Program Effective Term: Fall 2017

This program prepares students to transfer into an elementary education program at a four-year college or university. The first two years of instruction in a bachelor's degree program in elementary education is covered. The program includes the general education courses used for most elementary education programs in Michigan, that prepare students for the state-mandated basic skills tests. Requirements may vary among colleges so students should obtain the current curriculum from the college to which they are transferring and talk to an undergraduate advisor early in their studies. Curriculum and admission requirements are available on most colleges' Web sites.

Articulation:
Ferris State University, BS degree;
Eastern Michigan University, BS degree.

This program meets MTA. Students must have their transcripts certified for MTA completion by the WCC Student Records Office.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Students must have an Academic Math Level of 3 to enroll in MTH 148 and Academic Math Level 4 to enroll in MTH 176. At least two years of high school algebra is recommended.

Continuing Eligibility Requirements:
Admission requirements for bachelor's degree teacher education programs may vary among colleges. Most require a minimum grade point average of 2.0 for courses to transfer as well as a minimum of 56 to 60 college credits completed and successful completion of the state-mandated basic skills test before applying for admission to the program.

First Semester		**(17 credits)**
COM 101	Fundamentals of Speaking	3
ENG 111	Composition I	4
GEO 101	World Regional Geography	3
MTH 148	Functional Math for Elementary Teachers I	4
PLS 112	Introduction to American Government	3

Second Semester		**(17 credits)**
ENG 226	Composition II	3
GLG 202	Earth Science for Elementary Teachers	4
MTH 149	Functional Math for Elementary Teachers II	4
PSY 100	Introduction to Psychology	3
Elective	Complete one course from the following: ENG 181, ENG 214 or ENG 242	3

Third Semester		**(15 credits)**
ENG 240	Children's Literature	3
PSY 251	Education of Exceptional Children	3
CIS 100 or	Introduction to Computer Productivity Apps	
CIS 110	Introduction to Computer Information Systems	3
Elective	Complete a minimum of 6 credits in your major or minor area (e.g. language arts, math, science, social studies, etc.)*	6

Fourth Semester		**(15 credits)**
HST 201	United States History to 1877	3
MTH 176	College Algebra	4
PHY 100	Physics for Elementary Teachers	4
PSY 220	Human Development and Learning	4

Minimum Credits Required for the Program: 64

Notes:

**See an advisor to select courses that will meet the requirements of the college to which you are transferring.*

Program Information Report

Secondary Education (AASECO)

Associate in Arts Degree

Program Effective Term: Fall 2017

Program is also available online

This program prepares students for transfer into a bachelor's degree program in secondary education at a four-year college or university. The program covers the first two years of instruction, including the general education courses, used by most secondary education programs in Michigan, which prepare students for the state-mandated basic skills tests. Requirements may vary among colleges. Students should obtain the current curriculum from the college to which they are transferring and talk to an undergraduate advisor early in their studies. Curriculum and admission requirements are available on most colleges' Web sites.

Articulation:
Eastern Michigan University, BS degree.

This program meets MACRAO. Students must have their transcripts certified for MACRAO completion by the WCC Student Records Office.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Continuing Eligibility Requirements:
Admission requirements for bachelor's degree teacher education programs may vary among colleges. Most require a minimum grade point average of 2.0 for courses to transfer as well as a minimum of 56 to 60 college credits completed and successful completion of the state-mandated basic skills test before applying for admission to the program.

First Semester		(16 credits)
CIS 100 or	Introduction to Computer Productivity Apps	
CIS 110	Introduction to Computer Information Systems	3
COM 101	Fundamentals of Speaking	3
ENG 111	Composition I	4
PLS 112	Introduction to American Government	3
ENG 181 or	African-American Literature	
ENG 214 or	Literature of the Non-Western World	
ENG 242	Multicultural Literature for Youth	3

Second Semester		(16 credits)
ENG 226	Composition II	3
PSY 100	Introduction to Psychology	3
Elective	Complete one course from: ARB 111, ARB 122, ENG 160, ENG 170, ENG 211, ENG 212, ENG 213, ENG 222, ENG 223, ENG 224, FRN 111, FRN 122, FRN 213, FRN 224, GRM 111, GRM 122, SPN 111, SPN 122, SPN 201, or SPN 202*	3-5
Elective	Complete one course from: MTH 176, MTH 181, MTH 191 or MTH 197	4-5
Elective	Complete a minimum of 3 credits in a major or minor area.**	3

Third Semester		(17 credits)
PSY 251	Education of Exceptional Children	3
Elective	Complete one course from: BIO 101, BIO 102, CEM 105, CEM 111, GLG 100, GLG 114, PHY 105, or PHY 111	4
Elective	Complete one course from: HST 121, HST 122, HST 123, HST 201, or HST 202	3
Elective	Complete a minimum of 7 credits in a major or minor area.**	7

Fourth Semester		(11 credits)
PSY 220	Human Development and Learning	4
Elective	Complete a minimum of 3 credits in a major or minor area.**	3-4
Elective	Complete a second science course in a different discipline from: BIO 101, BIO 102, CEM 101, CEM 111, GLG 114, PHY 111 or any other MTA approved science course	4-5

Minimum Credits Required for the Program: 60

Notes:

**Students following the Michigan Transfer Agreement (MTA) should select their second Arts and Humanities course from any on the approved MTA list except ENG, GDT 101 and PHO 103.*

Program Information Report

***See an advisor to select courses that will meet the requirements of the college to which you are transferring.*

Program Information Report

Early Childhood Education/EMU Early Childhood Education BS (TR01D1ECED)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation**

The program prepares students to transfer into an early childhood education program at Eastern Michigan University. The first two years of instruction in a bachelor's degree program in an early childhood education major is covered. The program includes the general education courses that prepare students for the state-mandated basic skills tests for teachers in the State of Michigan. Requirements vary by college, so students should obtain the current curriculum for the college to which they are transferring.

Articulation:
Eastern Michigan University, Liberal Arts in Early Childhood Education and Elementary Education BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(67 credits)
	Complete a maximum of sixty-seven credits at Washtenaw Community College as outlined on the Articulation Agreement.	67
	Complete a minimum of seventy-two credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **67**

English as a Second Language

This program is for international students preparing for college degree study in the United States.

Program Information Report

English as a Second Language (CTESL1)

Certificate

Program Effective Term: Fall 2017

This certificate is for international students who would like to prepare for college degree study in the United States. Students experience rigorous English study in grammar, writing, listening/speaking, and reading in order to given them the best possible chances of success in future degree studies.

Program Admission Requirements:
This certificate is open only to international students who speak English as their second language. Students must place into Low-Intermediate to Advanced ESL courses at WCC using the English Placement Test (EPT).

Major/Area Requirements		(24 credits)
ESL 132	Intermediate ESL Grammar*	4
ESL 161	Advanced ESL Grammar*	4
ESL 128	Low Intermediate ESL Reading and Writing*	4
ESL 134	Intermediate ESL Reading*	4
	Students with higher reading levels may substitute ACS 107 and/or ACS 108 for ESL 128 and/or ESL 134	
ESL 138 or	Intermediate ESL Writing*	
	Students with higher writing levels may substitute ESL 168	4
ESL 135 or	English Listening, Pronunciation and Conversation (ESL)*	
	Students with higher listening/speaking skills may substitute ESL 165; elective to reach 24 total credits may be required	4

Minimum Credits Required for the Program: 24

Notes:

**Students will be placed at appropriate entry-level course based on EPT or regular Accuplacer scores.*

Exercise Science

This program prepares the student for further study in the area of exercise science.

Program Information Report

Exercise Science (ASESCI)

Associate in Science Degree

Program Effective Term: Fall 2017

The Exercise Science program is designed to prepare students for employment at the entry level in health and fitness-related occupations and/or for higher education by training in the sciences that relate to physical activity, health, fitness, nutrition, wellness, and weight control. Completion of the two-year degree will prepare students for the ACSM certification exams for personal trainer and/or health/fitness instructor. The AS degree in Exercise Science from WCC is designed to prepare students for transfer to a four-year institution that offers degrees in sports medicine-exercise science, kinesiology, movement science, and physical education. Individuals that transfer to four-year institutions in these fields (and in some cases go beyond the four-year degree) can be expected to find employment in a wide variety of occupations, including (but not limited to) physician, physician's assistant, physical therapist, physical therapist assistant, research scientist, fitness manager, worksite wellness coordinator, exercise specialist, clinical exercise physiologist, coach, physical education teacher, and other exercise-related positions.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

First Semester		**(18 credits)**
BIO 162	General Biology II Cells and Molecules	4
ENG 111	Composition I	4
MTH 160	Basic Statistics	4
MTH 178	General Trigonometry**	3
PSY 100	Introduction to Psychology	3

Second Semester		**(18 credits)**
BIO 110	Introduction to Exercise Science	3
BIO 161	General Biology I Ecology and Evolution	4
CEM 111	General Chemistry I	4
ENG 226	Composition II	3
PHY 111	General Physics I	4

Third Semester		**(18 credits)**
BIO 111	Anatomy and Physiology - Normal Structure and Function	5
BIO 201	Physiology of Exercise	4
	Arts/Human. 1 Elective(s)	3
	Computer Lit. Elective(s)	3
	Soc. Sci. Elective(s)*	3

Fourth Semester		**(17 credits)**
BIO 215	Cell and Molecular Biology	4
BIO 225	Tests and Measurements in Exercise Science	3
HSC 131	CPR/AED for the Professional Rescuer and First Aid	1
	Arts/Human. 2 Elective(s)	3
	Soc. Sci. Elective(s)*	3
	Speech Elective(s)	3

Minimum Credits Required for the Program: 71

Notes:

**Transfer students should select two MACRAO-approved Social Science courses.*
***Students must have an Academic Math Level of 5 to enroll in MTH 178.*

Program Information Report

Exercise Science/EMU Exercise Science BS (TR01X1ESCI)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

The Exercise Science program prepares students for transfer to a bachelor's of exercise science at Eastern Michigan University. Individuals that transfer to four-year institutions in these fields (and in some cases go beyond the four-year degree) can be expected to find employment in a wide variety of occupations, including (but not limited to) physician, physician's assistant, physical therapist, physical therapist assistant, research scientist, fitness manager, worksite wellness coordinator, exercise specialist, clinical exercise physiologist, coach, physical education teacher and other exercise-related positions.

Articulation:
Eastern Michigan University, Exercise Science BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(82 credits)
	Complete a maximum of eighty-two credits at Washtenaw Community College as outlined on the Articulation Agreement.	82
	Complete a minimum of forty-two credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **82**

Graphic Design

From the foundations of visual communication through production techniques, this field allows you to utilize your creative and artistic abilities.

Program Information Report

Graphic Design/College for Creative Studies Commun Desgn-Graphic Design BFA (TR06G1GRD)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

This program prepares students for a career as a graphic designer. Graphic designers work with writers, publishers, photographers, printers, and other specialists in the field of visual communication design to communicate, inform, instruct, or sell. Students may work on publications, advertising, or the Internet. The program focuses on developing skills in basic design theory, concept development, typography, the major graphic design software, and knowledge of production techniques for print and electronic media as exhibited in a portfolio. Creative and artistic ability is required for careers in graphic design, as well as originality and capacity for experimentation in visual problem-solving. Students also need an aptitude for developing strong skills with desktop computers and graphics software programs. This program prepares students for transferring to the College for Creative Studies.

Articulation:
College for Creative Studies, Communication Design-Graphic Design BFA

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(93 credits)
	Complete a maximum of ninety-three at Washtenaw Community College as outlined on the Articulation Agreement.	93
	Complete a minimum of forty-five credits at College for Creative Studies as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 93

Program Information Report

Graphic Design/EMU Bachelor of Fine Arts-Graphic Design Conc BFA (TR01G1GRD)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program prepares students for transfer to a bachelor's of fine arts with graphic design concentration degree program at Eastern Michigan University where they will further improve their skills in graphic and publication design. Students should check with an advisor for information on transferring.

Articulation:
Eastern Michigan University, BFA with Graphic Design Concentration

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(89 credits)
	Complete a maximum of eighty-nine credits at Washtenaw Community College as outlined on the Articulation Agreement.	89
	Complete a minimum of thirty-six credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **89**

Liberal Arts Transfer

This program of study can be individualized to meet your needs or the requirements of the transfer college or university.

Program Information Report

Film Studies (AAFS)

Associate in Arts Degree

Program Effective Term: Fall 2017

In this program, students will be introduced to film as a medium of artistic expression and persuasion. Students will critically study motion pictures covering a variety of eras, cultures and genres. They will be introduced to the various elements of the creative process involved in film making such as narrative, acting, mise-en-scene, editing, cinematography and sound. Students will develop the skills necessary to critically and technically evaluate one of the most dynamic and influential art forms of the past 100 years.

First Semester		(17 credits)
COM 130	Introduction to Mass Communication	3
HUM 120	Introduction to Film	3
Elective	Math Elective(s)	4
Elective	Soc. Sci. Elective(s)	3
Elective	Writing Elective(s)	4

Second Semester		(15 credits)
HUM 160	American Film	3
Elective	Computer Lit. Elective(s)	3
Elective	Speech Elective(s)	3
Elective	Writing Elective(s)	3
COM 150 or	Introduction to Radio Production*	
VID 105	Foundations in Digital Video I*	3-4

Third Semester		(13 credits)
HUM 150 or	International Cinema	
HUM 185	The Horror Film	3
Elective	Nat. Sci. Elective(s)	4
Elective	Soc. Sci. Elective(s)	3
COM 150 or	Introduction to Radio Production*	
VID 105	Foundations in Digital Video I*	3-4

Fourth Semester		(15 credits)
HUM 220	Great Directors	3
HUM 221	Film and Representation	3
	Add a second Nat. Sci. Elective(s) course from a different discipline**	3-4
	Open electives to reach a minimum of 60 credits	6-5

Minimum Credits Required for the Program: 60

Notes:

**Do not select the same course twice.*
*** Students following the Michigan Transfer Agreement (MTA) should complete a second natural science course.*

Program Information Report

Global Studies (AAGS)

Associate in Arts Degree

Program Effective Term: Fall 2017

Associate of Arts Liberal Arts Transfer in Global Studies will aid students in the development of an open, inclusive, international perspective through the study of human cultures, history, and language. This degree will provide students with the basic international and intercultural understanding that is applicable in the university and in the workplace, as well as prepare them for entry into a degree program at a four-year academic institution.

First Semester		(16 credits)
ART 150	Monuments and Cultures	3
ENG 111	Composition I	4
	Foreign Language*	5
	Math Elective(s)	4

Second Semester		(15 credits)
ENG 226	Composition II	3
GEO 101	World Regional Geography	3
	Foreign Language*	5
	Nat. Sci. Elective(s)	4

Third Semester		(15 credits)
	Arts/Human. Elective(s)	3
COM 225	Intercultural Communication	3
	Computer Lit. Elective(s)	3
	Global Studies Elective(s)**	3
	Soc. Sci. Elective(s)	3

Fourth Semester		(15 credits)
ANT 201	Introduction to Cultural Anthropology	3
	Arts/Human. Elective(s)	3
	Global Studies Elective(s)**	3
	Global Studies Elective(s)**	3
	Soc. Sci. Elective(s)***	3

Minimum Credits Required for the Program: 61

Notes:

**First Year Language I and II meet the requirements, excludes conversational courses.*
***Go to http://webfiles.wccnet.edu/Foreign%20Language/Global_Studies_Course_Options.pdf*
****Students following MACRAO should complete a third social and behavioral science course. Students following the Michigan Transfer Agreement (MTA) should complete a second science course instead.*

Program Information Report

Honors in the Liberal Arts (AAHLA)

Associate in Arts Degree

Program Effective Term: Fall 2017

Honors in the Liberal Arts offers an enhanced academic experience for students seeking transfer to selective four-year institutions. Program courses are reading and writing intensive and require critical-thinking and analysis. The program curriculum is structured around the theme: "America in the World: Global Awareness & Diversity."

Program Admission Requirements:
Students must apply and be admitted to the Honors Program. This is a competitive program and a limited number of students will be admitted each year. Unless currently enrolled in Washtenaw Technical Middle College, all applicants must be high school graduates or possess a GED. A separate application form is required for admission to this program. Application information is available by contacting the Honors Director identified under the advisor link below. More information can be found at:
http://www.wccnet.edu/academics/programs/honors-program/

Students must also meet one of the following requirements:
- a high school GPA of 3.5 or higher (if less than 20 college credits have been completed)
- college GPA of 3.5 or higher (if 20 or more college credits have been completed)
- an ACT score of 25 or higher
- an SAT score of 1150 or higher

Under the guidance of the Honors Director, students will develop an individualized curriculum that meets General Education/MTA and the requirements for their intended four-year college. Students must successfully complete a minimum of 20 credit hours taken for honors credit to receive the AAHLA degree. Honors courses are noted in the program layout.

Continuing Eligibility Requirements:
Honors students must maintain a minimum 3.5 cumulative GPA. In addition, students must earn a minimum grade of B in each honors course in order to earn honors credit for that course. Students failing to meet the above minimum standards will meet with the Honors Director and/or Honors Committee to determine the student's continuing status in the program.

Semester 1 (Fall)		**(14 credits)**
COM 101	Fundamentals of Speaking	3
ENG 111	Composition I*	4
PHL 123	Critical Thinking*	3
Elective	Nat. Sci. Elective(s)	4

Semester 2 (Winter)		**(16 credits)**
ANT 201	Introduction to Cultural Anthropology*	3
ENG 226	Composition II*	3
Elective	Computer Lit. Elective(s)	3
Elective	Math Elective(s)	4
Elective	Nat. Sci. Elective(s)	3-4

Semester 3 (Fall)		**(17 credits)**
ENG 211	American Literature I - Before 1900*	3
HST 255	Making the Modern World*	3
PHL 240	Social-Political Philosophy*	3
Elective	First Year Language I**	5
Elective	Open Elective	3

Semester 4 (Winter)		**(14 credits)**
HST 215	History of U.S. Foreign Relations*	3
PLS 290	American Power in the 21st Century*	3
PSY 270	Social Psychology and Global Applications*	3
Elective	First Year Language II**	5

Minimum Credits Required for the Program: 61

Notes:

**Students must register for the "Honors" designation section for a minimum of 20 Honors credit hours of these courses.*
***These are suggested electives. Some four-year colleges require a foreign language. Each honors student will develop an*

individualized curriculum that meets General Education/MTA and the requirements for their intended four-year college in consultation with the Honors Director.

Program Information Report

Liberal Arts Transfer (AALAT)

Associate in Arts Degree

Program Effective Term: Fall 2017

Program is also available online

This program allows students to design a program of study to meet individual needs, and is a good option for students who are undecided about a major, or simply want to explore various areas in the arts and social sciences. This program allows for customization of coursework to meet the requirements of the transfer college or university. A counselor will assist in developing a program of study that meets all of the College's graduation requirements. A counselor can also help students determine interests, career and educational goals, as well as provide transfer and career information.

Major Concentrations (1-5)
Complete 15 credits from the following: ANT, ARB, ART, COM, DAN, DRA, ECO, ENG, FRN, GEO, GRM, HST, HUM, JRN, MUS, PHL, PLS, PSY, SOC, SPN and YOG.

Electives (100-level or above transferrable courses): Complete a minimum of 12 credits to bring the total credits to 60.

Articulation:
Eastern Michigan University, BA and BS degrees;
Central Michigan University, BS degree;
Savannah College of Art and Design, BFA degree;
Siena Heights, several BA and BFA degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

First Semester		(14 credits)
ENG 111	Composition I	4
	Math Elective(s)	4
	Major Concentration 1	3
	Major Concentration 2	3

Second Semester		(16 credits)
ENG 226	Composition II	3
	Elective(s) 100-level or above transferrable courses	3
	Elective(s) 100-level or above transferrable courses	3
	Major Concentration 3	3
	Nat. Sci. Elective(s)*	4

Third Semester		(15 credits)
COM 101	Fundamentals of Speaking	3
	Arts/Human. Elective(s)	3
	Computer Lit. Elective(s)	3
	Major Concentration 4	3
	Soc. Sci. Elective(s)	3

Fourth Semester		(15 credits)
	Arts/Human. Elective(s)	3
	Nat. Sci. Elective(s)**	3-4
	Elective(s) 100-level or above transferrable courses to reach a minimum of 60 credits.	3-4
	Major Concentration 5	3
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Program: 60

Notes:

**Transfer students should select a lab-based, MTA-approved science course.*
***Students following the Michigan Transfer Agreement (MTA) should complete a second natural science course from a different discipline.*

Program Information Report

Technical Communication (AATCD)

Associate in Arts Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

In this program, students explore the technical communication process in detail and develop skills in audience analysis, project management, technical writing and editing, document design and usability testing. Using tools of the technical communication profession, students prepare content for print and online delivery, develop screencast training modules, learn how to conduct a formal job search and create professional portfolios to showcase their skills.

The Technical Communication Associate in Arts degree is designed for students transferring to a four-year university and seeking a Bachelor of Arts degree. The General Education requirements fulfill both Washtenaw Community College's requirements and the MTA Transfer requirements.

Articulation:
Eastern Michigan University, BA or BS degree;
Madonna University, BA degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:
Basic computer literacy.

First Semester		**(14 credits)**
COM 101	Fundamentals of Speaking	3
ENG 111	Composition I	4
Elective	Math Elective(s)	4
Elective	Soc. Sci. Elective(s)	3

Second Semester		**(12 credits)**
ENG 107	Technical Writing I	3
ENG 226	Composition II	3
Elective	GDT Elective Select one course from the following: GDT 104, GDT 106, GDT 107 or GDT 108	3-4
Elective	Soc. Sci. Elective(s)*	3

Third Semester		**(15 credits)**
ENG 208	Technical Writing II	3
Elective	Arts/Human. Elective(s)*	3
Elective	Nat. Sci. Elective(s)	3
Elective	Restricted Elective(s)**	3
Elective	WEB Elective Select one course from the following: WEB 110, WEB 113 or WEB 115	3-4

Fourth Semester		**(15 credits)**
ENG 209	Technical Writing III	3
ENG 245	Job Search Success Seminar	2
Elective	Arts/Human. Elective(s)*	3
Elective	Nat. Sci. Elective(s)*	4
Elective	Restricted Elective(s)**	3-4

Fifth Semester		**(4 credits)**
ENG 218	Technical Writing IV	3
	Elective to reach a minimum 60 credits	1-0

Minimum Credits Required for the Program: 60

Notes:

**If your course(s) exceeds the recommended credit hours, you will need to reduce the number of credits in the restricted electives. Students who plan to transfer to a 4-year university are encouraged to meet with the Technical Communication program advisor to select appropriate general education courses.*
***JRN 210 is strongly recommended. Students must meet with the Technical Communication program advisor to select additional*

elective courses.

Program Information Report

Liberal Arts Transfer/EMU Communication Major BS (TR01O2LAT)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program prepares students for transfer to a bachelor of arts or science degree program at Eastern Michigan University, where they will further improve their communication and interpersonal skills in personal, professoinal and public contexts. Students should check with an advisor for information on transferring.

Articulation:
Eastern Michigan University, Communication Major, BA or BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(94 credits)
	Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
	Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

Math and Science

Learn more about math or science through this associate degree program.

Program Information Report

Environmental Science (ASENVS)

Associate in Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

This program is designed to prepare students to deal with environmental issues and concerns from a global point of view. Students will select from two tracks, one focusing on physical science and the other emphasizing the social science perspective. Both tracks integrate biology, chemistry and geology and lead to an Associate in Science degree which should transfer to 4-year institutions following the MACRAO and MTA guidelines. Students will have first-hand lab experiences studying environmental problems from a scientific perspective as well as proposing and implementing solutions to sustainability. The program prepares students for careers in resource management, waste management, sustainability, environmental consultation and other related fields.

Articulation:
Siena Heights University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Minimum Concentration Credits Required for the Program: 60
Complete a concentration: Environmental Science or Environmental Science and Society.

Environmental Science Concentrations

Environmental Science (ENV1)		(60 credits)
First Semester		**(15 credits)**
ENG 111	Composition I	4
GLG 114	Physical Geology	4
MTH 160	Basic Statistics	4
	Computer Lit. Elective(s)	3
Second Semester		**(14 credits)**
BIO 162	General Biology II Cells and Molecules	4
ENG 226	Composition II	3
ENV 101	Environmental Science I	4
GEO 101	World Regional Geography	3
Third Semester		**(16 credits)**
CEM 111	General Chemistry I*	4
ENV 105	Introduction to Environment and Society	3
GLG 276	Principles of Geographic Information Systems	3
	Soc. Sci. Elective(s)**	3
	Speech Elective(s)	3
Fourth Semester		**(15 credits)**
ENV 174	ENV Co-op Education I	1
PHL 205	Ethics	3
	Arts/Human. Elective(s)	3
	Electives to reach a total of 60 credits.***	8

Minimum Credits Required for the Concentration or Option: 60

Environmental Science and Society (ENV2)		(60 credits)
First Semester		**(14 credits)**
ENG 111	Composition I	4
GLG 100	Introduction to Earth Science	4
SOC 100	Principles of Sociology	3
	Computer Lit. Elective(s)	3
Second Semester		**(14 credits)**
BIO 162	General Biology II Cells and Molecules	4
ENG 226	Composition II	3
ENV 101	Environmental Science I	4
GEO 101	World Regional Geography	3

Program Information Report

Third Semester		(17 credits)
CEM 111	General Chemistry I*	4
ENV 105	Introduction to Environment and Society	3
MTH 160	Basic Statistics	4
PHL 205	Ethics	3
	Electives to reach a total of 60 credits.#	3

Fourth Semester		(15 credits)
ENV 174	ENV Co-op Education I	1
	Arts/Human. Elective(s)	3
	Speech Elective(s)	3
	Electives to reach a total of 60 credits.***	8

Minimum Credits Required for the Concentration or Option: 60

Minimum Credits Required for the Program: 60

Notes:

**The prerequisite for this course may include a higher math level than those used in the program. See an advisor for assistance.*

***Recommended MACRAO and MTA approved social science courses: SOC 100, ECO 211, ECO 222 or PLS 112.*

****Students following the MACRAO agreement should select one additional social science and one additional arts and humanities course.*

#Students transferring to EMU in the Environmental Science program should select GLG 276.

Program Information Report

General Studies in Math and Natural Sciences (ASGSMS)

Associate in Science Degree

Program Effective Term: Fall 2017

Program is also available online

This program allows students to design a program of study to meet their individual needs. This may be a good option if students are undecided about a major and want to explore a variety of discipline areas with a concentration in math and natural sciences. The program also allows students to customize their coursework to the requirements of the senior college or university to which they are transferring. Students should begin by meeting with a counselor who will assist them in developing a program of study that meets all of the College's graduation requirements. A counselor can also help students determine their interests and career and educational goals as well as provide transfer and career information.

Math/Science Concentration
Complete a concentration in math or science 15 credit hours from no more than two disciplines chosen from Biology, Chemistry, Environmental Science, Geology, Math or Physics (A minimum of 6 credits at the 200 level is strongly recommended). Students transferring to EMU should select from the following WCC courses: BIO 161, BIO 162, BIO 208, BIO 215, BIO 227, BIO 228; CEM 105, CEM 111, CEM 122, CEM 140, CEM 211, CEM 222; ENV 101, ENV 105; GLG 100, GLG 103, GLG 104, GLG 114, GLG 276; MTH 191, MTH 192, MTH 197, MTH 293, MTH 295; PHY 111, PHY 122, PHY 211, PHY 222. Please see an advisor to select courses that will meet the requirements of the college to which you are transferring.

Concentration 2
Complete a second concentration. Select 9 credits from no more than two disciplines listed below (A minimum of 3 credits at the 200 level is strongly recommended). Select from Anthropology, Arabic, Art, Astronomy, Biology, Chemistry, Communication, Computer Information Systems, Computer Networking Technology, Computer Science, Computer Systems Security, Computer Systems Technology, Criminal Justice, Dance, Drama, Economics, English, Environmental Science, French, Geography, Geology, German, Health Science, History, Humanities, Math, Music, Philosophy, Physics, Political Science, Psychology, Sociology or Spanish.

First Semester		**(16 credits)**
ENG 111	Composition I	4
	Concentration 2: select a course	3
	Math/Science concentration: select a course	3
	Soc. Sci. Elective(s)	3
	Speech Elective(s)	3
Second Semester		**(13 credits)**
ENG 226	Composition II	3
	MTH 191 or higher	4-5
	Arts/Human. Elective(s)	3
	Math/Science concentration: select a course	3
Third Semester		**(16 credits)**
	Computer Lit. Elective(s)	3
	Concentration 2: select a course	3
	Math/Science concentration: select a course	3
	Math/Science concentration: select a course	3
	Nat. Sci. Elective(s)*	4
Fourth Semester		**(15 credits)**
	Arts/Human. Elective(s)	3
	Concentration 2: select a course	3
	Math/Science concentration: select a course	3
	Soc. Sci. Elective(s)	3
	Electives for total of 60 credits	3

Minimum Credits Required for the Program: 60

Notes:

** Students following the Michigan Transfer Agreement (MTA) should complete two natural science courses from two different disciplines. One course must have a lab component. See WCC catalog for eligible courses.*

Program Information Report

Courses used to meet General Education Requirements cannot be counted toward the minimum credits for the concentrations.

Program Information Report

Math and Science (ASMSAS)

Associate in Science Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

This program prepares students to transfer to a four-year college or university to complete a bachelor's degree in actuarial science, biology, chemistry, math, pharmacy, or physics. The program will give students a solid foundation in math and science. Students should obtain program requirements and transfer equivalencies from the college to which they are transferring.

Complete the requirements for one of the following concentrations.

Biology/Pre-Medicine (BMED)
CEM 111 General Chemistry I
CEM 122 General Chemistry II
CEM 211 Organic Chemistry I
CEM 222 Organic Chemistry II
Elective: BIO 111, BIO 208, BIO 215, BIO 227, BIO 228 or BIO 237

Chemistry/Pre-Medicine (CMED)
CEM 111 General Chemistry I
CEM 122 General Chemistry II
CEM 211 Organic Chemistry I
CEM 222 Organic Chemistry II
MTH 197 Linear Algebra

Mathematics (MATH)
MTH 160 Basic Statistics
MTH 197 Linear Algebra
MTH 293 Calculus III
MTH 295 Differential Equations
Elective: Take an additional three credits in the MTH discipline

Physics/Pre-Engineering (PENG)
CEM 111 General Chemistry I
MTH 197 Linear Algebra
MTH 293 Calculus III
MTH 295 Differential Equations
PHY 211 Analytical Physics I
PHY 222 Analytical Physics II

Pre-Actuarial Science (PPAS)
ECO 211 Principles of Economics I
ECO 222 Principles of Economics II
MTH 191 Calculus I
MTH 192 Calculus II
MTH 197 Linear Algebra
MTH 293 Calculus III

Pre-Pharmacy (PPHA)
Two Restricted Electives in Biology (see below)
CEM 211 Organic Chemistry I
CEM 222 Organic Chemistry II
PHY 111 General Physics I
PHY 122 General Physics II
Biology Restricted Electives for Pre-Pharmacy (PPHA): BIO 111, BIO 161, BIO 162, BIO 208, BIO 237, BIO 215, BIO 227 or BIO 228
Optional Transfer Courses for Pre-Pharmacy (PPHA): MTH 160, MTH 192, along with other Biology restricted electives. See a program advisor to select appropriate Biology courses.

Articulation:
This program will fulfill the Michigan Transfer Agreement (MTA) requirements provided the student takes two science courses from two different disciplines. One course must have a lab component. Students must have MTA posted on their transcripts by the WCC Student Records Office.

This program will fulfill MACRAO requirements if, in addition to the courses completed to meet General Education requirements,

students complete one additional course in Social and Behavioral Science. Students must have MACRAO posted on their transcripts by the WCC Student Records Office.

Program Admission Requirements:
- Students must have an Academic Math Level of 7 to begin the math sequence. Two years of high school algebra and one year of high school pre-calculus are recommended to prepare for this program.
- The physics concentration requires one semester of high school physics or PHY 111 with a "C" or better to enroll in PHY 211.
- The biology, chemistry, and physics concentrations require one year of high school chemistry or CEM 101 with a "C" or better to enroll in CEM 111.

Minimum Concentration Credits Required for the Program: 60

Math and Science Concentrations

Biology/Pre-Medicine (BMED)		(61 credits)
First Semester		**(15 credits)**
BIO 162	General Biology II Cells and Molecules	4
CEM 111	General Chemistry I	4
MTH 176 or	College Algebra	
MTH 191	Calculus I*	4
Elective	Computer Lit. Elective(s)	3
Second Semester		**(16 credits)**
BIO 161	General Biology I Ecology and Evolution	4
CEM 122	General Chemistry II	4
ENG 111	Composition I	4
MTH 160 or	Basic Statistics**	
MTH 192	Calculus II	4
Third Semester		**(14 credits)**
CEM 211	Organic Chemistry I	4
ENG 226	Composition II	3
Elective	Soc. Sci. Elective(s)	3
Elective	Select one course from the following: BIO 111, BIO 208***, BIO 215, BIO 227, BIO 228 or BIO 237	4
Fourth Semester		**(16 credits)**
CEM 222	Organic Chemistry II	4
COM 101	Fundamentals of Speaking	3
Elective	Arts/Human. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3
Elective	Arts/Human. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 61

Chemistry/Pre-Medicine (CMED)		(62 credits)
First Semester		**(16 credits)**
CEM 111	General Chemistry I	4
MTH 191	Calculus I	5
PHY 111	General Physics I	4
Elective	Computer Lit. Elective(s)	3
Second Semester		**(16 credits)**
CEM 122	General Chemistry II	4
ENG 111	Composition I	4
MTH 192	Calculus II	4
PHY 122	General Physics II	4
Third Semester		**(14 credits)**
CEM 211	Organic Chemistry I	4
ENG 226	Composition II	3
MTH 197	Linear Algebra	4
Elective	Soc. Sci. Elective(s)	3
Fourth Semester		**(16 credits)**
COM 101	Fundamentals of Speaking	3
CEM 222	Organic Chemistry II	4

Elective	Arts/Human. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3
Elective	Arts/Human. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 62

Mathematics (MATH) (60 credits)

First Semester (16 credits)

BIO 162 or	General Biology II Cells and Molecules	
CEM 111 or	General Chemistry I	
PHY 111	General Physics I	4
MTH 191	Calculus I	5
Elective	Computer Lit. Elective(s)	3
ENG 111	Composition I	4

Second Semester (15 credits)

BIO 161 or	General Biology I Ecology and Evolution	
CEM 122 or	General Chemistry II	
PHY 122	General Physics II	4
MTH 160	Basic Statistics	4
MTH 192	Calculus II	4
Elective	Soc. Sci. Elective(s)	3

Third Semester (17 credits)

COM 101	Fundamentals of Speaking	3
ENG 226	Composition II	3
MTH 197	Linear Algebra	4
MTH 293	Calculus III	4
Elective	Soc. Sci. Elective(s)	3

Fourth Semester (12 credits)

MTH 295	Differential Equations	4
Elective	Arts/Human. 2 Elective(s)	3
Elective	Arts/Human. Elective(s)	3
Elective	Elective(s) to reach a minimum of 60 credits.	2-3

Minimum Credits Required for the Concentration or Option: 60

Physics/Pre-Engineering (PENG) (68 credits)

First Semester (16 credits)

CEM 111	General Chemistry I	4
MTH 191	Calculus I	5
PHY 111	General Physics I	4
Elective	Computer Lit. Elective(s)	3

Second Semester (15 credits)

ENG 111	Composition I	4
MTH 192	Calculus II	4
PHY 122	General Physics II	4
Elective	Arts/Human. Elective(s)	3

Third Semester (15 credits)

ENG 226	Composition II	3
MTH 197	Linear Algebra	4
PHY 211	Analytical Physics I	5
Elective	Soc. Sci. Elective(s)	3

Fourth Semester (15 credits)

COM 101	Fundamentals of Speaking	3
MTH 293	Calculus III	4
PHY 222	Analytical Physics II	5
Elective	Arts/Human. Elective(s)	3

Program Information Report

Fifth Semester		(7 credits)
MTH 295	Differential Equations	4
Elective	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 68

Pre-Actuarial Science (PPAS) (60 credits)

First Semester		(16 credits)
ACC 111	Principles of Accounting I	3
CPS 161	An Introduction to Programming with Java	4
ENG 111	Composition I	4
MTH 191	Calculus I	5

Second Semester		(16 credits)
ACC 122	Principles of Accounting II	3
ECO 211	Principles of Economics I	3
ENG 226	Composition II	3
MTH 192	Calculus II	4
Elective	Arts/Human. Elective(s)	3

Third Semester		(14 credits)
ECO 222	Principles of Economics II	3
MTH 197	Linear Algebra	4
Elective	Nat. Sci. Elective(s)	4
Elective	Soc. Sci. Elective(s)+	3

Fourth Semester		(14 credits)
MTH 293	Calculus III	4
Elective	Arts/Human. Elective(s)++	3
Elective	Nat. Sci. Elective(s)+++	4
Elective	Speech Elective(s)	3

Minimum Credits Required for the Concentration or Option: 60

Pre-Pharmacy (PPHA) (62 credits)

First Semester		(16 credits)
Elective	Biology Restricted Elective	4
CEM 111	General Chemistry I	4
MTH 191	Calculus I	5
Elective	Arts/Human. Elective(s)	3

Second Semester		(15 credits)
Elective	Restricted Biology Elective	4
CEM 122	General Chemistry II	4
ENG 111	Composition I	4
Elective	Speech Elective(s)	3

Third Semester		(17 credits)
CEM 211	Organic Chemistry I	4
ENG 226	Composition II	3
PHY 111	General Physics I	4
Elective	Arts/Human. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Fourth Semester		(14 credits)
CEM 222	Organic Chemistry II	4
PHY 122	General Physics II	4
Elective	Computer Lit. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 62

Minimum Credits Required for the Program: 60

Program Information Report

Notes:

**Students transferring to EMU as a biology major may substitute MTH 176 or any higher 4-credit hour math course for MTH 191.*
***Students transferring to EMU as a biology major may substitute MTH 160 or higher for MTH 192.*
****Students transferring to EMU as a biology major may consider completing BIO 208 at WCC prior to transfer.*
+See the MTA list to make course selections from any discipline except ECO.
++Transfer students should consider a course from the the EMU Diverse Word Requirements list.
+++Students may take 3 credits of a MTA approved natural science course as the second Natural Science elective but may need an elective to bring the total number of credits back up to 60 if necessary.

Program Information Report

Environmental Science/Siena Heights Environmental Science BS (TR08E1ENVS)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

This program prepares students to transfer to a bachelor of science program in Environmental Science. The four-year degree prepares students for a diverse set of career options. Students should check with an advisor for information on transferring.

Articulation:
Siena Heights, Environmental Science BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(90 credits)
	Complete a maximum of ninety credits at Washtenaw Community College as outlined on the Articulation Agreement.	90
	Complete a minimum of thirty credits at Siena Heights University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 90

Networking

Develop and manage computer networks as a network administrator/engineer.

Program Information Report

Computer Systems Networking/EMU Technology Management BS (TR01C6CSN)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

This program prepares students for transfer to a bachelor of science degree program in technology management at Eastern Michigan University, where they will further their skills in computer systems and networking. Students should check with an advisor for information on transferring.

Articulation:
Eastern Michigan University, Technology Managment, BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(94 credits)
	Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation agreement.	94
	Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 94

Nursing

Prepare for a career in a variety of health care settings through these certificate and associate in applied science degree program.

Program Information Report

Nursing, Registered/Davenport Bachelor Completion Program BSN (TR02N1NURS)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program prepares students for challenging and exciting jobs in all settings of health care, from the hospital to home care. Students will gain proficiency in technical aspects of nursing care, such as medication administration, treatments and procedures, and use of medical technology. Students will also earn credits that transfer to Davenport University's BSN Nursing Completion program. Students should check with an advisor for information on transferring.

Articulation:
Davenport University, Bachelor Completion Program BSN

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(72 credits)
	Complete a maximum of seventy-two credits at Washtenaw Community College as outlined on the Articulation Agreement.	72
	Complete a minimum of forty-nine credits at Davenport University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **72**

Program Information Report

Nursing, Registered/EMU BSN Completion (TR01N1NURS)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program is designed for students transferring to Eastern Michigan University where they will earn a BSN in the Nursing Completion program. Students are prepared for challenging and exciting jobs in all settings of health care, from the hospital to home care. Students will gain proficiency in technical aspects of nursing care, such as medication administration, treatments and procedures, and use of medical technology. Students should check with an advisor for information on transferring.

Articulation:
Eastern Michigan University, Nursing Completion BSN

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(97 credits)
	Complete a maximum of ninety-seven credits at Washtenaw Community College as outlined on the Articulation Agreement.	97
	Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **97**

Program Information Report

Nursing, Registered/EMU Technology Management BS (TR01N2NURS)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program is designed for students who are interested in Eastern Michigan University's Technology Management program. The curriculum provides the necessary foundation to meet the changing needs of management in the health field. Students should check with an advisor for information on transferring.

Articulation:
Eastern Michigan University, Technology Management BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(94 credits)
	Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
	Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

Program Information Report

Nursing, Registered/UM (Flint) Nursing BSN (TR05N1NURS)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program prepares students for challenging and exciting jobs in all settings of health care, from the hospital to home care. Students will gain proficiency in technical aspects of nursing care, such as medication administration, treatments and procedures, and use of medical technology. Students will also earn credits that transfer to UM- Flint's BSN program. Students should check with an advisor for information on transferring.

Articulation:
Univeristy of Michigan Flint, Nursing BSN

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(75 credits)
	Complete a maximum of seventy-five credits at Washtenaw Community College as outlined on the Articulation Agreement.	75
	Complete a minimum of forty-five credits at UM-Flint as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **75**

Pharmacy Technology

Work with a professional pharmacist to meet the medication and customer service needs of individuals in a variety of settings.

Program Information Report

Pharmacy Technology/EMU Health Administration BS (TR01P1PHT)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program prepares students for transfer to a health administration bachelor's of science degree program at Eastern Michigan University. Students are trained for health administration jobs in nursing homes, home health agencies, outpatient facilities, hospitals, public health agencies, health maintenance organizations and many other health care settings. Students should check with an advisor for information on transferring.

Articulation:
Eastern Michigan University, Health Administration BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(94 credits)
	Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
	Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

Program Information Report

Pharmacy Technology/EMU Technology Management BS (TR01P2PHT)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program is designed for students who are interested in Eastern Michigan University's Technology Management program. The curriculum provides the necessary foundation to meet the changing needs of management in the health field. Students should check with an advisor for information on transferring.

Articulation:
Eastern Michigan University, Technology Management BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(94 credits)
	Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
	Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

Photography

Develop skills in composition, processing and presentation needed for a satisfying career in professional photography or as a means of personal expression.

Program Information Report

Photographic Technology/College for Creative Studies Photography BFA (TR06P1PHOT)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

This program provides a comprehensive foundation in digital and film based photography. Through a combination of required basic courses and specialized elective courses, the student customizes the program to his or her particular interest in the photographic industry. Students have opportunities to work with a variety of advanced photographic equipment including digital cameras, view cameras, traditional darkroom, and various types of studio and location lighting systems. Graduating students produce professional portfolios and self-promotional materials to find employment in a variety of areas such as photographic assisting, photojournalism, fine art, freelance, portrait and wedding photography. Students also complete the program to use photography as a means of personal expression, and as preparation for transferring to the College for Creative Studies.

Students should choose the appropriate faculty for academic advising based on their last name: Terry Abrams (A-G), Jennifer Baker (H-O), Donald Werthmann (P-Z).

Articulation:
College for Creative Studies, Photography BFA

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(81 credits)
	Complete a maximum of eighty-one credits at Washtenaw Community College as outlined on the Articulation Agreement.	81
	Complete a minimum of forty-five credits at College for Creative Studies as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 81

Physical Therapist Assistant

Work with a physical therapist to provide selected services to patients with a wide variety of conditions.

Program Information Report

Physical Therapist Assistant/Davenport Health Services Administration BBA (TR02T1PTA)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program is designed for students transferring to Davenport University. They will earn a bachelor in business administration degree in Health Services Administration (HSA). The degree will prepare students for various management responsibilities in a variety of health care settings. Students should check with an advisor for information on transferring.

Articulation:
Davenport University, Health Services Administration BBA

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(65 credits)
	Complete a maximum of sixty-five credits at Washtenaw Community College as outlined on the Articulation Agreement.	65
	Complete a minimum of sixty-five credits at Davenport University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **65**

Program Information Report

Physical Therapist Assistant/EMU Health Administration BS (TR01T1PTA)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

This program prepares students for transfer to a health administration bachelor's of science degree program at Eastern Michigan University. Students are trained for health administration jobs in nursing homes, home health agencies, outpatient facilities, hospitals, public health agencies, health maintenance organizations and many other health care settings. Students should check with an advisor for information on transferring.

Articulation:
Eastern Michigan University, Health Administration BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(94 credits)
	Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
	Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 94

Professional Writing

Whether your goal is journalism or technical writing, these programs provide a foundation for beginning writing or to undertake advanced studies at a four-year institution.

Program Information Report

Journalism (AAJOUR)

Associate in Arts Degree

Program Effective Term: Fall 2017

High Skill Occupation High Wage Occupation

This program prepares students to transfer to a four-year institution and major in journalism. Four specialty courses provide a solid background in journalism-related content. Students in the program will gain invaluable experience in areas of a career in journalism.

Articulation:
Eastern Michigan University, BS degree;
Madonna University, BA degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

First Semester		(17 credits)
COM 130	Introduction to Mass Communication	3
ENG 111	Composition I	4
JRN 111	Introduction to Journalism	3
	Computer Lit. Elective(s)	3
	Math Elective(s)	4

Second Semester		(13 credits)
COM 101	Fundamentals of Speaking	3
ENG 226	Composition II	3
JRN 210	Introduction to Copy Editing**	3
Elective	Nat. Sci. 1 Elective(s)*	4

Third Semester		(15 credits)
JRN 217	Introduction to Feature Writing**	3
Elective	Arts/Human. 1 Elective(s)	3
Elective	Nat. Sci. 2 Elective(s)*	3
Elective	Soc. Sci. 1 Elective(s)	3
	Restricted Elective(s) 1 ENG 107 or Any 100-level or above course from COM, GDT, WEB, PHO, PLS or VID	3

Fourth Semester		(15 credits)
JRN 220	Introduction to Digital Journalism**	3
Elective	Arts/Human. 2 Elective(s)	3
	Soc. Sci. 2 Elective(s)	3
	Restricted Elective(s) 2 ENG 107 or Any 100-level or above course from COM, GDT, WEB, PHO, PLS or VID	3
	Elective(s) Any 100-level or above course to bring the total credits to a minimum of 60.	3

Minimum Credits Required for the Program: 60

Notes:

**Transfer students should select MTA-approved Natural Science courses from two disciplines, including one with laboratory experiences; Arts and Humanities courses from two disciplines; and Social and Behavioral Science courses from two disciplines.*
***JRN 217 is offered in Fall only; JRN 210 and JRN 220 are offered in Winter only.*

Radiography

Prepare for a career as a radiographer, operating medical imaging equipment.

Program Information Report

Radiography/Davenport Health Services Administration BBA (TR02R1RAD)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program is designed for students transferring to Davenport University. They will earn a bachelor in business administration degree in Health Services Administration (HSA). The degree will prepare students for various management responsibilities in a variety of health care settings. Students should check with an advisor for information on transferring.

Articulation:
Davenport University, Health Services Administration BBA

http://www.wccnet.edu/curriculum/articulation/levelone/colleges

Requirements		(71 credits)
	Complete a maximum of seventy-one credits at Washtenaw Community College as outlined on the Articulation Agreement.	71
	Complete a minimum of sixty-one credits at Davenport University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **71**

Program Information Report

Radiography/EMU Health Administration BS (TR01R1RAD)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program prepares students for transfer to a bachelor's of science degree program in health administration at Eastern Michigan University. Students are trained for health administration jobs in nursing homes, home health agencies, outpatient facilities, hospitals, public health agencies, health maintenance organizations and many other health care settings. Students should check with an advisor for information on transferring.

Articulation:
Eastern Michigan University, Health Administration BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(94 credits)
	Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
	Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

Program Information Report

Radiography/EMU Technology Management BS (TR01R2RAD)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program is designed for students who are interested in Eastern Michigan University's Technology Management degree program. The curriculum provides the necessary foundation to meet the changing needs of management in the health field. Students should check with an advisor for information on transferring.

Articulation:
Eastern Michigan University, Technology Management BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(94 credits)
	Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
	Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

Social Work

This program prepares you to transfer to a bachelor's degree program in social work.

Program Information Report

Human Services (AAHUST)

Associate in Arts Degree

Program Effective Term: Fall 2017

High Demand Occupation High Skill Occupation High Wage Occupation

This program prepares students for a job as a substance abuse, hospice, case, psychiatric, or social services aide in settings such as schools, rehabilitation centers, and mental health clinics or as a staff member in a community/neighborhood center. The program provides skills students will need to work on a one-to-one basis or in groups to help people cope with problems. The program also prepares students to transfer to a bachelor's degree program where they will continue developing skills for a career in the field of social work. The program transfers to Eastern Michigan University and Madonna University.

Articulation:
Eastern Michigan University, BSW degree*
Kaplan University, BS degree;
Madonna University, BSW degree.

*Students should meet with an EMU Department of Social Work advisor before applying for admission to EMU's program.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Applying for Admission to the Program:
The faculty and administration reserve the right to admit and retain only those students who, in their judgment, possess academic and personal suitability for the Human Services Program. Suitability criteria are listed below and also can be found in the Human Services Student Handbook.

Applications to the program must be made during the semester that students are enrolled in HSW 100 (Introduction to Human Services). Interested students who are enrolled in the course will be invited to submit a written request for an admission interview.

Program Admission Requirements:
Applicants must have the following:
-Academic Math Level of 2
-Academic Reading and Writing Levels of 6

Applicants must enroll in HSW 100 and complete the course with a grade of "C" or better.

Applicants must meet the following suitability criteria:
- Has a cumulative GPA of 2.0 in all WCC courses
- Demonstrates honesty in dealings with other students and faculty
- Demonstrates behavior conforming to the National Organization for Human Service Education's "Ethical Standards of Human Service Professionals" (printed in the program handbook)
- Presents in an appropriate and professional manner in the interview
- Demonstrates evidence of being able to relate to clients in a helpful manner
- Applicants must submit a letter of recommendation from a non-family member who knows them well such as a minister, employer, or teacher.

Continuing Eligibility Requirements:
Faculty will review students' eligibility for the program on an ongoing basis.

1. Students must maintain satisfactory academic class performance, as evidenced by a minimum cumulative GPA of 2.0.
2. Students must earn a "C" or better in all HSW courses.
3. To enroll in the Human Services field internships, students must have completed prerequisite coureses with a "C" or better.
4. Students must maintain at least an 80% rate of attendance in class and in an internship placement.
5. Students must honor any agreement entered into with an agency serving as an internship site.
6. Students must maintain ethical behavior as defined in the National Organization for Human Service Education's "Ethical Standards of Human Services Professionals."
7. Students should be aware that internship sites might conduct background checks on applicants to determine if they have been convicted of a crime or are addicted to drugs or alcohol.

Program Information Report

First Semester		(17 credits)
BIO 101 or	Concepts of Biology	
BIO 102	Human Biology	4
ENG 111	Composition I	4
HSW 100	Introduction to Human Services	3
PSY 100	Introduction to Psychology	3
SOC 100	Principles of Sociology	3

Second Semester		(16 credits)
ENG 226	Composition II	3
HSW 200	Interviewing and Assessment	3
SOC 205	Race and Ethnic Relations	3
SOC 220	Group Dynamics and Counseling	3
	Restricted Math Elective(s)*	4

Third Semester		(17 credits)
HSW 229	Human Services Success Skills	1
PSY 206	Life Span Developmental Psychology	4
PSY 210	Behavior Modification	3
PSY 257	Abnormal Psychology	3
SOC 225	Family Social Work	3
	Arts/Human. Restricted Elective(s)**	3

Fourth Semester		(15 credits)
	Arts/Human. Elective(s)***	3
	Computer Lit. Elective(s)	3
	Nat. Sci. Elective(s) second MTA Natural Science (not BIO discipline)	3-4
COM 101 or	Fundamentals of Speaking	
COM 102	Interpersonal Communication	3
HSW 230	Field Internship and Seminar I	3

Minimum Credits Required for the Program: 65

Notes:

**Select one of the following courses: MTH 125, MTH 160, MTH 176, MTH 181 or MTH 191. Transfer students should check with their selected school to confirm the math and/or credit requirements.*

***Select one of the following courses: ART 143, ART 150, DAN 180, DRA 180, ENG 181, ENG 213, ENG 214, ENG 224 or ENG 242, HUM 150, HUM 175, HUM 221, MUS 180.*

****Select another course in a different discipline from the Humanities section of the MTA list. Do not choose any courses in bold; they don't meet WCC General Education requirements.*

If transferring to Madonna University, follow the curricular guide for that university. See a program advisor for details.

Program Information Report

Addiction Studies (CPAS)

Post-Associate Certificate

Program Effective Term: Fall 2017

Program is also available online

This program is designed for professionals interested in pursuing Certified Alcohol and Drug Counseling (CADC) certification through the State of Michigan. Courses focus on knowledge and skills necessary for working with clients with substance abuse disorders. This program will fulfill the educational requirements needed for CADC. Additional requirements for work experience and supervision must be met outside of this program.

Major/Area Requirements		(12 credits)
HSW 296	Neuropsychology of Addiction	3
HSW 297	Assessment of Co-occurring Disorders	3
HSW 298	Treatment of Addiction*	3
PSY 240	Drugs, Society and Human Behavior	3

Minimum Credits Required for the Program: 12

Notes:

**Must be the last course taken in the sequence of courses.*

Program Information Report

Human Services/EMU Bachelor of Social Work BSW (TR01H1HUST)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

This program prepares students for a job as a substance abuse, hospice, case, psychiatric, or social services aide in settings such as schools, rehabilitation centers, and mental health clinics or as a staff member in a community/neighborhood center. The program provides skills students will need to work on a one-to-one basis or in groups to help people cope with problems. The program also prepares students to transfer to a bachelor's degree program where they will continue developing skills for a career in the field of social work at Eastern Michigan University.

Articulation:
Eastern Michigan University, Social Work BSW

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(73 credits)
	Complete a maximum of seventy-three credits at Washtenaw Community College as outlined on the Articulation Agreement.	73
	Complete a minimum of fifty-one credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 73

Web Design and Development

Join the Web development industry through the completion of these certificates and degree.

Program Information Report

Web Design and Development/EMU Communication Technology BS (TR01V1WDDD)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

High Demand Occupation **High Skill Occupation** **High Wage Occupation**

This program prepares students for transfer to a bachelor's of communication technology degree program at Eastern Michigan University, where they will further their web design or development coursework. Students should check with an advisor for information on transferring.

Articulation:
Eastern Michigan University, Communication Technology, BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(93 credits)
	Complete a maximum of ninety-three credits at Washtenaw Community College as outlined on the Articulation Agreement.	93
	Complete a minimum of thirty-two credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **93**

Welding and Fabrication

Learn skills from beginning welding to advanced fabrication to help prepare for an entry-level career as welder, fabricator or field technician.

Program Information Report

Welding Technology/Davenport Applied Business BBA (TR02W2WLDF)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2017

The Bachelor of Business Administration - General Business allows students to apply technical skills learned in welding along with knowledge in the major business disciplines to careers in Operations, Management, Strategic Planning and Finance.

Articulation:
Davenport University, Applied Business BBA

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(87 credits)
	Complete a maximum of eighty-seven credits at Washtenaw Community College as outlined on the Articulation Agreement.	87
	Complete a minimum of thirty-four credits at Davenport University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 87

Program Information Report

Welding Technology/EMU Technology Management BS (TR01W4WLDF)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

This program prepares students to transfer to a bachelor of science program in Technology Management. Students will apply welding skills to the industrial and technical environments.

Articulation:
Eastern Michigan University, Technology Management BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(94 credits)
	Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
	Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

Program Information Report

Welding/Pennsylvania College Welding Fabrication Engineering Tech BS (TR12W1WLDT)

Associate Degree/3+1 Transfer

Program Effective Term: **Fall 2017**

High Demand Occupation **High Wage Occupation**

This program prepares students to transfer to a bachelor of science program in Welding and Fabrication Engineering Technology at Pennsylvania College of Technology. Students will apply welding skills to the industrial and technical environments.

Articulation:
Pennsylvania College of Technology, Welding and Fabrication Engineering Technology BS

http://www.wccnet.edu/curriculum/articulation/levelone/colleges/

Requirements		(88 credits)
	Complete a maximum of eighty-eight credits at Washtenaw Community College as outlined on the Articulation Agreement.	88
	Complete a minimum of fifty-seven credits at Pennsylvania College of Technology as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **88**

New Courses with Full Approval

Year: 2017-18

Course	Title	Credit Hr(s)	Effective Term
ABR 140	Aluminum Welding for Automotive Applications	4	Fall 2017
ABR 201	Lightweighting Composite Repair	4	Fall 2017
ABR 209	Advanced Metal Shaping	2	Fall 2017
CSS 201	Introduction to Cryptography	3	Fall 2017
ESL 168	Advanced ESL Writing	4	Fall 2017
HST 108	The Ancient and Medieval World	3	Fall 2017
HST 109	The Early Modern World	3	Fall 2017
MUS 114	Fundamentals of Performance	1	Fall 2017
NUR 108	Nursing Concepts I	8	Fall 2017
NUR 128	Nursing Concepts II	8	Fall 2017
NUR 129	LPN Option	1	Fall 2017
NUR 138	Nursing Concepts III	8	Fall 2017
NUR 248	Nursing Concepts IV	5	Fall 2017
NUR 258	Nursing Concepts Synthesis	3	Fall 2017
SUR 101	Introduction to Sterile Processing	6	Fall 2017
SUR 108	Sterile Processing Clinical	3	Fall 2017
SUR 109	Sterile Processing Seminar	1	Fall 2017

New Courses Total: **17**

New Courses Grand Total: **17**

Discontinued Courses

Year: 2017-18

Course	Title	Credit Hr(s)	Effective Term
BMG 241	Innovation:Process/Application	1	Fall 2017
UAE 165	Accelerated HVACR Training	12	Winter 2018
UAF 190	Accelerated Welder Training	12	Winter 2018
WEB 157	Dreamweaver	3	Fall 2017

Discontinued Courses Total: 4

Discontinued Courses Grand Total: 4

Reactivated Courses with Full Approval

Year: 2017-18

Course	Title	Credit Hr(s)	Effective Term
DAN 103	Beginning Tap Dance I	1	Fall 2017
DAN 104	Beginning Tap Dance II	1	Fall 2017

Reactivated Courses Total: **2**

Reactivated Courses Grand Total: **2**

Course Changes: Code, Title, and Credit Changes

Year: 2017-18

WAS			IS NOW		
Course	Title	Credits	Course	Title	Credits
ESL 165	Advanced ESL Speaking and Listening	3	ESL 165	Advanced ESL Speaking, Listening and Pronunciation	4
HST 121	Western Civilization I	3	HST 121	Ancient and Medieval Europe	3
HST 122	Western Civilization II	3	HST 122	Early Modern Europe	3
MBC 250	Medical Coding Practicum	0-3	MBC 250	Medical Coding Practicum	3
WEB 230	Web Development III	4	WEB 230	Advanced JavaScript	4
WEB 250	Web Development IV	4	WEB 250	PHP and MySQL	4

Total Courses: 6

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Course Information Report (Bulletin)
Active Courses

Academic and Career Skills ACS

ACS 065 Success Skills Workshop 3 credits

Level I Prerequisites: Academic Reading Level 3; no minimum writing level
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students explore skills and habits that lead to academic and personal success. Through class activities, application examples and journal writing, students will increase self-esteem, motivation, and emotional intelligence. Other topics include an introduction to active learning, learning preferences, time management, and effective communication. Personal and academic goal-setting will be explored.

ACS 095 Student Success Seminar 3 credits

Level I Prerequisites: Academic Reading Levels 4 or 5; no minimum writing level
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn to develop skills and habits that lead to academic, professional, and personal success. Through readings, activities, and journal writing, students will increase personal responsibility, self-motivation, self-management, interdependence, self-awareness, emotional intelligence, lifelong learning, and self-esteem. Other topics include an introduction to learning styles, reading and writing strategies, note-taking, studying tips, time management, effective communication, and money management. Personal, academic and career goal-setting will be explored.

ACS 101 Academic Skills Seminar 1 credit

Level I Prerequisites: ACS 107 or Academic Reading Level 4; no minimum writing level
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, students will develop skills and habits that lead to academic success. The following topics will be explored as they pertain to Math applications: learning styles, study strategies, note-taking, test-taking, learning and memory techniques, textbook reading strategies, writing strategies, organizational skills and time management techniques. The title of this course was previously Student Success Seminar.

ACS 105 Advanced Vocabulary 3 credits

Level I Prerequisites: Academic Reading Level 4; no minimum writing level; ACS 107 or ACS 108, may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to expand vocabulary and improve word recognition skills for college-bound students. Major areas of emphasis include the study of word derivations, context clues, dictionary skills, vocabulary acquisition strategies, pronunciation skills and some work with American idioms. An American historical novel is read and discussed to provide practice for new word acquisition skills. An individual final project is assigned where students teach specialized vocabulary from the academic area of their own choosing to the rest of the class.

ACS 107 College Reading and Study Skills 4 credits

Level I Prerequisites: Academic Reading Level 3 or 4; no minimum writing level
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will identify and develop the essential skills for academic success. Instructional units include the essentials for academic success: comprehensive textbook reading skills, vocabulary development, learning styles, time management, note-taking, reading rate strategies, test-taking and 21st century literacies. Successful completion of this course with a minimum grade of "C" will raise students' Academic Reading level to 5. The title of this course was previously College Study Skills and Speed Reading.

ACS 108 Critical Reading and Thinking 4 credits

Level I Prerequisites: Academic Reading Level 5; Academic Writing Level 3
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, higher order thinking strategies necessary for the interpretation and evaluation of reading content are refined and expanded. Students will develop critical reading and thinking skills needed in order to comprehend, analyze and interpret college-level materials as well as materials they encounter in the outside world. Students will develop language proficiency and become independent learners. Successful completion of this course with a minimum grade of "C" will raise students' Academic Reading level to 6. The title of this course was previously Problem Analysis and Critical Thinking.

ACS 110 Speed Reading 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

Through a variety of materials, technology and activities, students will learn strategies to increase reading speed, comprehension and critical reading skills. This college level course will improve the ability to meet the demands of the large amount of academic and career-related reading and will also enhance leisure reading.

ACS 111 College Success Seminar 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will analyze and evaluate the beliefs, attitudes, behaviors and skills that lead to academic, career and personal success. Through self-assessment, readings, activities and journal writing, students will synthesize data in order to improve self-management, increase self-esteem and maximize learning. Other topics include money management, effective use of college resources, critical thinking and decision-making and effective writing and communication. Academic, career and personal goal setting will be explored. The title of this course was previously First Year Experience Seminar.

ACS 121 Career Planning Seminar 2 credits

Level I Prerequisites: Academic Reading Level 4; Academic Writing Level 3
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course is designed for persons undecided about a program of study or career goal or interested in making a career change. Students complete a self-assessment of interests, work values, skills and abilities through exercises and vocational inventories. Students will also learn how to research careers, become more knowledgeable of careers, career alternatives and employment trends through the use of course materials, classroom activities, and in-class guest speakers. Other topics include: decision making, job skills, self-esteem and work attitude.

ACS 122 Career Decision Making 1 credit

Level I Prerequisites: Academic Reading Level 5; Academic Writing Level 6 or ENG 090 or ENG 091, may enroll concurrently
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course is designed for persons undecided about a program of study or career goal or contemplating changing careers. Students complete self-assessments of interests, work values, skills and abilities, personality preferences through exercises and vocational inventories. They also conduct informational interviews with professionals in their fields of interest.

ACS 123 Information Literacy 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, students receive an introduction to techniques of information retrieval and information evaluation. Students completing this course will have the skills needed to locate and evaluate information, to think critically about research strategies and to apply these concepts to research using library resources and the Internet.

ACS 150 Academic Skills for Health Sciences 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; This course is for students in a Health Science Program.
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, students in the Health Science programs will develop habits that enhance their academic success. Topics such as learning styles, study strategies, note-taking, test-taking, learning and memory techniques, textbook reading strategies, writing strategies, organizational skills and time management techniques will be explored.

ACS 151 Student Success: In and Beyond the Classroom 2 credits

Level I Prerequisites: No Basic Skills
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students develop skills and habits that lead to academic, professional, and personal success. Through readings, activities, and journal writing, students will improve personal responsibility, self-motivation, self-management, interdependence, self- awareness, emotional intelligence, lifelong learning and self-esteem. Students will also learn how to research and prepare for a career, become more knowledgeable of careers, career alternatives and employment trends through the use of career and interest inventories, classroom activities and guest speakers. Specific sections designed for military veterans.

Accounting ACC

ACC 100 Accounting Practices for Business 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces students to accounting processes and practices. Emphasis is placed on the systems for purchases and payments, billing and collections, basic bookkeeping and payroll. The class is designed for the non-accounting major. This course is not designed for transfer to four-year colleges. This course was previously ACC 091. The title of this course was previously Fundamentals of Accounting I.

ACC 110 Payroll Accounting 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3 or higher or MTH 125 minimum grade "C"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course covers basic concepts/principles and legal requirements of payroll accounting. Areas of study include payroll record keeping, Federal laws, computation of gross wages and salaries, payroll taxes, deductions, and completing government forms and reports.

ACC 111 Principles of Accounting I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4 or MTH 125 or MTH 160, minimum grade "C"; MTH 125 or MTH 160, may enroll concurrently

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this introductory course, students learn accounting principles and theory with emphasis on the accounting cycle, recording and valuation of assets, liabilities and stockholders' equity, financial reporting and an introduction to accounting systems and controls. Students will also perform financial analyses which will include assessing a company's ability to pay off its liabilities.

ACC 122 Principles of Accounting II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ACC 111

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a continuation of Principles of Accounting I covering partnerships, corporations, financial analyses, and an introduction to managerial accounting. Students learn how to identify financial accounting information pertaining to business entities and to evaluate a company's performance and forecast future performance.

ACC 131 QuickBooks Software 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is an introductory course in the application of basic accounting knowledge and theory in QuickBooks software. The course content includes sales, invoicing and receivables, payables and purchases, inventory, payroll, general accounting, financial statements and end-of-period procedures for a service and retail business. This course builds upon knowledge of bookkeeping principles. Upon successful completion of the course, students may choose to take the QuickBooks exam required to become certified as a QuickBooks Certified User (QBCU).

ACC 174 ACC Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Two courses in ACC discipline; consent required

0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, business-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two co-op courses.

ACC 213 Intermediate Accounting I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ACC 122, minimum grade "C"; Academic Math Level 4 or MTH 125 or any math level 4 or higher course with a minimum grade of "C"

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students continue the study of generally accepted accounting principles as they relate to financial accounting standards, financial statement presentation, and to the recording, valuation and disposition of current and non-current assets.

ACC 214 Intermediate Accounting II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ACC 213, minimum grade "C"; Academic Math Level 4 or MTH 125 or any math level 4 or higher course with a minimum grade of "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a continuation of Intermediate Accounting I. Students will study generally accepted accounting principles as they relate to financial statement presentation, and to the recording, valuation and disposition of liabilities and stockholders' equity. Evaluation of financial performance is also included.

ACC 225 Managerial Cost Accounting 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ACC 122
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn the principles and procedures for planning, reporting, and controlling cost. Topics will include managerial cost accounting fundamentals, tools for planning and control, process costing and capital investment decisions.

ACC 274 ACC Co-op Education II 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ACC 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

This is the second of two co-op courses in which students gain skills from a new experience in an approved, compensated, business-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience.

Animation ANI

ANI 145 Concept Development for Animation 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course is an introduction to the conceptualization process that precedes the creation of an animation. Students will participate in all phases of developing an idea for animation: research, plan, ideation, storyboarding, and logic.

ANI 150 3D Animation I: Modeling 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 30 other, 90 total contact hours

This course introduces students to creating digital 3D forms for animation. Various techniques (wire frame, compound primitives and NURBS) are used to construct 3D forms. Using industry-standard software, students develop 3D modeling/animation skills while learning the technical vocabulary needed for the 3D modeling/animation industry. Students create and apply textures and lighting to digital 3D forms, investigate camera positioning/point of view and perform simple rotational animation.

ANI 155 Textures and Studio Lighting for Animation 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 30 other, 90 total contact hours

In this course, students will use industry standard software to texture 3D models. Students will learn to create virtual lighting setups and cameras. Common and advanced rendering engines will also be explored.

ANI 160 Fundamentals of Movement and Animation 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 30 other, 90 total contact hours

This is an introductory course in moving and animating 3D models. Students will learn the theory of motion, movement and established principles of animating and apply these to their 3D artwork. Using existing models, they will develop motion and animation skills. Students will animate rigid objects, organic objects and simple characters. Students will be exposed to keyframe animation and direct animation.

ANI 230 Motion and Sound 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ANI 145, ANI 150 and GDT 108, minimum grade "C"
Corequisites: ANI 250
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course focuses on the knowledge and skills needed to produce motion and sound for animations. Characteristics of space and movement, as well as concepts and techniques related to the generation and use of sound, will be studied. This course is an integral part of assembling animations, as well as bringing them to life with editing, and Foley arts.

ANI 235 Introduction to Compositing and Visual Effects 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ANI 150 minimum grade "C"
30 lecture, 0 lab, 0 clinical, 60 other, 90 total contact hours

In this course, students will be introduced to the basics of compositing as used in animation. Students will use various software to combine different elements into a single image or series of images. These elements may include 2-dimensional images, 3-dimensional images, backgrounds, lighting as well as special effects such as fire, smoke, and fog. Students will also animate basic visual effects using various dynamic systems.

ANI 250 3D Animation II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ANI 145, ANI 150, and GDT 108, minimum grade "C"
Corequisites: ANI 230
60 lecture, 0 lab, 0 clinical, 30 other, 90 total contact hours

This course builds on the 3D skills of ANI 150. The course will work on proficiency and efficiency in model construction, texture building, and furthering concepts in modeling for animation. The class will explore photorealistic rendering, keyframing, inverse and forward kinematics, and more complex animations. The class will pinnacle in a finished output to video for presentation.

ANI 260 3D Animation III 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ANI 155, ANI 160 and ANI 250, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 30 other, 90 total contact hours

This course builds skills from previous 3D animation courses at a more advanced level. Students will develop proficiency and efficiency in model construction, texture building, and furthering concepts in modeling for animation. The class will explore animation and rigging, photorealistic rendering, special effects, and scene construction.

Anthropology ANT

ANT 201 Introduction to Cultural Anthropology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will employ anthropological theory and method to survey the human experience from a holistic perspective. Relationships between human biology, psychology and culture will be examined utilizing the essential concepts and methods that typify cultural anthropology, so that the student may better understand and appreciate the diversity of culture and the flexibility of human adaptations.

ANT 202 Introduction to Physical Anthropology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will examine the human species from a biological and biocultural perspective. Major areas of coverage include evolutionary theory, human genetics, human variation, adaptive and developmental responses to stress, primate studies, primate and hominin evolution, hominin fossil record, and prehistoric archaeological evidence for cultural evolution.

ANT 205 Introduction to Archaeology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides a survey of anthropological archaeology. Topics covered include the following: basic goals of archaeology, archaeological methods and techniques used to research the material record of human behavior, and core anthropological theories used to explain human evolution and socio-cultural change. Archaeological site reports will be used throughout the course to illustrate research practices.

ANT 265 Introduction to Forensic Anthropology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will explore the role of the Forensic Anthropologist, the methods used to interpret dental and skeletal data, and the legal implications of applying scientific scrutiny to death investigation. The application of scientific methods in the investigation of homicides, mass disasters, and human rights cases means that the Forensic Anthropologist plays a crucial role in the analysis of evidence and the communication of these results to members of law enforcement.

Arabic ARB

ARB 111 First Year Arabic I 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This course is an introduction to Modern Standard Arabic in which students develop skills in listening, speaking, reading, and writing. Students explore the language through multimedia (CD and DVD), dictation, instructor-prepared materials, and small group participation. Cultural aspects of the Arabic-speaking world are also discussed. Arabic and English will be the medium of instruction during the first six weeks of the course, after which the teacher and students communicate primarily in Arabic.

ARB 122 First Year Arabic II 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ARB 111 minimum grade "C-"
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This is a continuation of an introduction to Arabic as a second/foreign language. It builds on the basic structures of Arabic and expands its uses in common situations of everyday communication. Students will acquire a solid grammatical base that will enhance their overall linguistic proficiency and enable them to pursue their interest in the language. The course exposes students to authentic Arabic cultural and linguistic material (audio tapes of songs, video records, poems and short stories etc).

Art ART

ART 101 Introduction to Studio Art 3 credits

Level I Prerequisites: No Basic Skills
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This course will introduce students to a number of media and practices in studio art. Problems in drawing, design and a color medium will be given. The student will become acquainted with such basic concepts as figure/ground interaction and value relationships. Some of the materials used may be pencils, paper, acrylic paint and linoleum block printing.

ART 102 Color 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This studio course will use colored papers to investigate the interaction of colors, with the aim of developing awareness of how color operates in everyday experience. The objective is to increase students' sensitivity to color so that it can be used more effectively.

ART 108 Three-Dimensional Design 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

In this studio class, students will use a variety of three-dimensional materials and methods to explore the qualities inherent in good design. Stressing practice before theory, the student will create designs that explore ways of articulating form. Projects will introduce the student to a variety of materials and use of both hand and power tools.

ART 111 Basic Drawing I 4 credits

Level I Prerequisites: No Basic Skills
15 lecture, 75 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students are introduced to freehand drawing. Accurate representational drawing is emphasized through a series of projects concentrating on simple objects and the use of space. Students are introduced to and will discuss the central problems and issues of freehand drawing.The course is recommended as a beginning level course before other art courses at WCC are taken and for students who plan to transfer to another college or university.

ART 112 Basic Design I 4 credits

Level I Prerequisites: No Basic Skills
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

In this studio course, students use materials to explore two-dimensional design. The goal is to develop careful seeing and analytical thinking that can be applied to all areas of the visual arts. This course is recommended for students who are planning to continue in art at WCC or transfer to another college or university.

ART 114 Painting I 4 credits

Level I Prerequisites: No Basic Skills; ART 101 minimum grade "B", may enroll concurrently or ART 111 minimum grade "C", may enroll concurrently

30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This course is an analytical approach to the fundamental problems and issues of painting, with emphasis on composition and the articulation of volumetric forms in space.

ART 120 Portrait Painting and Life Drawing 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ART 101 minimum grade "C"
0 lecture, 0 lab, 0 clinical, 90 other, 90 total contact hours

The major emphasis of this course is direct observation and artistic expression of the human form using traditional media, Conte and pastel. Design and value relationships are studied, as are the superficial muscular and skeletal systems which affect the surface form. Sessions on portraiture, using the anatomical approach, are included.

ART 121 Ceramics I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This studio class will guide the student through a series of projects in clay. The student will develop a comprehension of the different aspects of the ceramic process. The student will also develop a specific set of skills for manipulating and firing clay. The pieces created will demonstrate the different processes and stages by which a piece of clay becomes a piece of ceramic art.

ART 121A Ceramics I Part I 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This studio class will guide the student through a series of projects in clay. The student will develop a comprehension of the different aspects of the ceramic process. The pieces created will demonstrate the different processes and stages by which a piece of clay becomes a piece of ceramic art. Students must complete both ART 121A and ART 121B to receive full credit for Ceramics I and/or transfer to a 4-year institution.

ART 121B Ceramics I Part II 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ART 121A minimum grade "B"
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This studio class will guide students and build on the basic skills developed in ART 121A. The student will develop a deeper understanding of the different aspects of the ceramic process. Students will develop a specific set of skills for manipulating and firing clay. The pieces created will demonstrate a greater familiarity with the different processes and stages by which a piece of clay becomes a piece of ceramic art. Students must complete both ART 121A and ART 121B to receive full credit for Ceramics I and/or transfer to a 4-year institution.

ART 122 Basic Drawing II 4 credits

Level I Prerequisites: No Basic Skills; ART 111 minimum grade "C"
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

Complex problems of drawing are explored with greater emphasis placed on individual solutions. Several new media are introduced.

ART 125 Painting II 4 credits

Level I Prerequisites: No Basic Skills; ART 114 minimum grade "C+"
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

Students will continue exploration of the fundamental problems and issues of painting. Greater emphasis is placed on individual development.

ART 127 Life Drawing I 4 credits

Level I Prerequisites: No Basic Skills; ART 111 minimum grade "C+"

30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students will be provided instruction in basic approaches to drawing the nude. Quick gesture drawings will develop the movement and drama of the figure. Longer developed drawings will explore the structure of the figure. Emphasis is on analyzing the figure in terms of its simple, solid, underlying forms. This course was previously ART 140.

ART 128 Ceramics II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ART 121 minimum grade "C"
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This course will further explore the fundamental problems and processes of ceramics. The student will integrate the skills learned into a series of ceramic works demonstrating a variety of processes and firing temperatures. Students will take an active role in all aspects of studio management.

ART 129 Life Drawing II 4 credits

Level I Prerequisites: No Basic Skills; ART 127 minimum grade "C"
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This course will continue instruction in basic approaches to drawing the nude. Increased proficiency in the skill and concepts introduced in Life Drawing I will be emphasized. New materials will be introduced.

ART 130 Art Appreciation 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: Computer Literacy
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will explore a variety of artistic media and periods of the visual arts. Through lectures, visuals, class discussions, projects and, if possible, one field trip, students will be exposed to the visual arts and how they impact our daily lives.

ART 131 Art Appreciation through Art Museum Experiences 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: Computer Literacy
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will explore a variety of artistic media and periods of the visual arts focusing on a direct experience in a museum or studio context. Through several field trips, lectures, discussions, projects and encounters with artists, original works of art and public art projects, students will be exposed to the visual arts and how they impact our daily lives.

ART 136 Ceramics III 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ART 128 minimum grade "B"; ART 108, ART 111 or ART 112, may enroll concurrently

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course students will refine their mastery of the basic ceramic processes and develop an individual vision for ceramic art as demonstrated through acceptance of their art work into a gallery or competitive show. Skill development will focus on the interplay of surface and form. Students will work exclusively on the wheel and will be taught to make a variety of forms on a larger scale. Students will explore different techniques and styles of surface development such as image transfer, multiple firings, firings at different temperatures and different atmospheres, use of engobs, underglaze pencil and crayon, crystal glazes and lusters.

ART 143 African American Art and Culture 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a study of African American art and culture. It explores the political, social, and cultural effects of various events such as The Revolutionary War, The Civil War, The Great Migration, and The Civil Rights Movement on the arts. Students will be introduced to literary, artistic, and cultural achievements from the colonial era to the present.

ART 150 Monuments and Cultures 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: Computer Literacy
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to architectural monuments from around the world. It focuses on the comparison of diverse architectural, religious, cultural and individual ideas. Eight to ten secular and sacred monuments will be analyzed, such as palaces, homes, cities, tombs and temples. Monuments from Europe, Asia, Middle East, Africa and the Americas are discussed to demonstrate a wide spectrum of ideas.

ART 285 Self-Management for Working Artists 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will learn how to market themselves or others in the art and performing arts industries. Students will focus on developing interpersonal skills; preparing a portfolio of work; booking appearances or performances; preparing, analyzing and negotiating contracts; and determining the monetary value of the work of an artist. Students will explore how to manage their business while creating a multi-faceted career. Students may not earn credit in both ART 285 and MUS 285.

Astronomy AST

AST 100 Backyard Astronomy 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

An introduction to objects seen in the sky, with some opportunity for direct observation when weather permits. Astronomy is presented as a hobby as well as a basic science. No prior knowledge of astronomy is required.

AST 111 General Astronomy 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

Astronomy 111 is an in-depth survey of the solar system and the universe. Topics covered will include: the sun, moon, and planets; Ptolemaic and Copernican systems; seasonal changes in the sky and modern ideas stemming from early beliefs in astrology. Cosmology and the structure of the universe will also be discussed. It is designed for both transfer and vocational students, no previous science is required, however some general mathematics is needed.

Auto Body Repair ABR

ABR 111 Introduction to Auto Body Repair 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

This entry level, self-paced course will focus on preparing students for a career in the automotive collision repair industry. Through the use of training modules, students will learn industry standard repair procedures, damage assessment, and proper tool selection to aid in the repair of collision damaged automobiles. Additionally, students will be provided with hands-on training for body panel repair and alignment, plastic welding, MIG welding and be introduced to the automotive finishing process.

ABR 112 Introduction to Automotive Refinishing 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

This entry level, self-paced course establishes the foundation on which the beginning painter builds his or her knowledge for a career in the automotive refinishing industry. Students will be exposed to today's industry standard methods to include learning how to apply base and clear systems, single stage coatings, primers, and sealers. This is a "hands-on" course where students will learn panel preparation, proper mixing of sprayable materials, proper spray gun techniques and adherence to industry safety procedures. This course was previously Auto Body II: Refinishing Fundamentals.

ABR 113 Estimating and Shop Operations 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; ABR 111 and ABR 112
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students develop skills in repair estimation associated with collision damaged vehicles. Skills acquired will include hand written estimation along with the use of software specifically developed for the auto body repair industry. Damage assessment, parts compilation, calculation of repair cost, and refinishing information are some of the subjects to be covered. Additionally, students will examine the nature of the body shop management team and the factors that contribute to the success and profitability of an effective, efficient operation. The title of this course was previously Applied Body Welding and Estimation.

ABR 114 Applied Auto Body Welding 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 111 minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

Students will develop and apply basic welding and MIG brazing skills associated with crash damaged panel replacement as related to the collision repair industry. Areas of study will include proper equipment selection and set up, fitment of panels to be welded, and plasma cutting procedures. Emphasis will be placed on producing I-CAR acceptable MIG welding of steel and aluminum of butt, lap, and plug welds completed in various welding positions. Student will also be introduced to MIG brazing using various grades of steel.

ABR 116 The Evolution of the Automobile 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This introductory course provides students with basic knowledge and skills relating to automotive design, evolution, and repair. The course combines lecture, student-conducted research, and hands-on shop training. Topics include: evolution of auto design, automotive systems, and research techniques. Students participate in lab experiences to develop skills in parts fabrication.

ABR 119 The Art of Metal Shaping 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This course will introduce the student to "the working of sheet metals by hand." In addition to skillful handling of tools, it is necessary for the students to possess a thorough knowledge of the properties and behavior of materials in order to insure that they move in the desired direction when worked. Areas of study will include: Sheet metal shaping with hand tools over handcrafted wood forms, over anvils, and over sand/shot bags and fabricating hand-made parts using a range of sheet metal materials with varied thickness and hardness.

ABR 123 Technical Auto Body Repair 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 111 minimum grade "C"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

Students continue to build on skills learned. Students will be exposed to aspects of body panel modification including fender sectioning, shaving door handles, door skinning and continuation of basic bumping techniques using specialty items such as hydraulic rams. Emphasis is placed on quality, craftsmanship and excellent work habits.

ABR 124 Technical Automotive Refinishing 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 112 minimum grade "C"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

This course provides students the opportunity to advance fundamental skills. Lab assignments will include the proper surface preparation of a vehicle's front clip. Operations such as proper spraying techniques for the application of metallic colors, spot repairs, color blending, single stage, base-coat clear-coat systems, tri-coat finishes, and specialty products will be covered. Basic custom paint, detailing, and advanced color mixing and matching will also be covered.

ABR 130 Custom Painting 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 112 minimum grade "B"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

This course is designed for creative students with an interest in the art of custom painting. Participants in this course learn techniques such as air brushing, pin striping, and lettering, along with the creation of custom graphics, murals and etching. Students will use special effect colors such as pearls and candies on lab assignments that were expertly developed to help participants succeed in the field of custom painting. Students must purchase their own air brush.

ABR 135 Collision-Related Mechanical and Electrical Repairs 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

This course will introduce the student to the fundamental principles of the automotive mechanical, electrical and body component repair issues required to restore vehicle collision damage to pre-accident condition.

ABR 140 Aluminum Welding for Automotive Applications 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 114 minimum grade "B-"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students develop skills and techniques associated with the cosmetic and structural repair of modern collision-damaged vehicles. Students are introduced to the welding process and equipment used to weld aluminum panels and coupons of varying thickness. Safe welding techniques, site preparation, tool choice and other I-CAR (Inter-Industry Conference on Auto Collision Repair) and NATEF rules will be covered.

ABR 174 ABR Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 112 and ABR 113; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated position in the field of auto body repair. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two possible co-op experiences. Students with equivalent experience may contact the instructor for permission to waive the prerequisite.

ABR 201 Lightweighting Composite Repair 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 123 minimum grade "B-"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will learn about composite materials such as resins with reinforcing carbon fiber, and their uses in modern vehicles. Material types and construction uses, specialty equipment and the importance of vacuum bagging will be introduced. Students will make and use molds as part of the lightweighting and repair process. Students develop and execute repair plans using composite materials.

ABR 209 Advanced Metal Shaping 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 119 minimum grade "B-"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

In this course, students will work individually and as a team to complete projects made from various types of metal. Areas of study will include: sheet metal shaping with hand and power tools over wooden "bucks," and layout of multi-piece projects through the use of cardboard templates, then transferred to metal. Procedures used in this class will consist of riveting, bell flanging, welding, English wheel and many others.

ABR 230 Advanced Auto Body V: Advanced Auto Refinish Applications 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 124
30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours

In this class, students utilize periods of concentrated effort on specific assignments in selected areas of the auto body repair field. Students work with instructor consultation to demonstrate development within the assigned area of general collision service, body shop organization and management or estimating automobile physical damage.

ABR 231 Project Management and Implementation in Auto Body 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 123 and ABR 124, minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

Students will develop and implement a project plan for specific auto body applications. They will practice identifying project tasks, skills levels required, costs, necessary materials and the time needed to complete the project. Following the development of the project plan, students will track their progress as they apply their skills and abilities to complete these tasks in a real world atmosphere.

ABR 274 ABR Co-op Education II 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses.

Automotive Services ASV

ASV 130 Automotive Maintenance 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will learn basic shop safety and accepted shop practices. Students will learn underhood and undercar preventive maintenance theory and practice as well as general mechanical skills. The focus of this course allows students to gain practical experience in the laboratory. The student will experience steering, suspension, and brake laboratory training. This course was previously ASV 141 and contains material previously taught in ASV 151.

ASV 131 Automotive Electrical 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will learn basic electrical theory, use and interpretation of automotive wiring diagrams, and use of electrical testing equipment. Students will learn the skills needed to diagnose and replace a number of commonly serviced electrical components. The focus of this course allows students to gain practical experience in the laboratory. This course was previously ASV 144 and contains material previously taught in ASV 152.

ASV 132 Automotive Engines 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 130 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will learn the theory and operation of automotive gasoline engines including disassembly, measurements, assembly and project organization. Students will gain practical experience of on-car engine repairs and diagnostic testing. This course was previously ASV 143 and contains material previously taught in ASV 153.

ASV 133 Automotive Fuel 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 131 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will learn the theory and operation of automotive fuel and emissions systems. Students will have the opportunity to inspect, diagnose, and perform services on fuel system components and emissions. This course was previously ASV 144 and contains material previously taught in ASV 153 and ASV 154.

ASV 134 Automotive Transmissions 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 130 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will learn the theory and operation of automatic and manual drivetrain systems. Topics include the basic diagnosis and repair of automatic transmissions and the basic diagnosis and repair of major drivetrain components. Students will be introduced to 4-wheel drive systems. Upon successful completion, the student will be able to service automatic transmission components as well as diagnose and replace manual drivetrain components. The focus of this course allows students to gain practical experience in the laboratory. This course contains material previously taught in ASV 155.

ASV 135 Facility Operations 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 30 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students will learn the skills needed to execute transactions in automotive technical and service environments. Students will learn about safety topics that pertain to working in the automotive industry and gain knowledge about mechanic and repair facility licensing requirements. This course contains material previously taught in ASV 157.

ASV 174 ASV Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated position in the field of automotive service technology. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two possible co-op experiences.

ASV 251 Engine Diagnosis and Repair 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 132 minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

Students learn the theory and execution of automotive engine mechanical diagnosis and repair during this course. Students learn to apply proper technique to perform a number of significant engine repairs. Students will develop skills for assessing the condition of engines before repair. This course was previously ASV 241.

ASV 252 Automatic Transmissions 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 134 minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

Diagnosis of mechanical, hydraulic and electrical transmission systems is featured in this course. Hydraulic and electrical fundamentals, as they pertain to transmission operation, are included. Students will develop skills in the removal, disassembly, repair, reassembly and installation of automatic transmissions and transaxles. This course was previously ASV 242.

ASV 253 Manual Drivetrain and Axles 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 134 minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

This course is designed to give an understanding of the diagnosis and repair of the automotive drivetrain systems. The course includes manual transmission, manual transaxle, differentials, transfer cases and clutch system diagnosis and repair. This course focuses on removal, service and replacement of major drivetrain components and sub-systems. This course was previously ASV 243.

ASV 254 Suspension and Steering 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 130 minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

In this course, students learn the theory and execution of automotive suspension and steering system diagnosis and repair. Students will apply proper techniques in performing 4-wheel alignments as well as major suspension and steering component replacement. This course was previously ASV 244.

ASV 255 Brakes 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 130 minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

In this course, students develop skills in diagnosing and repairing brake systems on vehicles. Instruction includes hydraulic system service and mechanical brakes system service. In addition, diagnosis and repair of anti-lock brake and stability control systems is included. This course was previously ASV 245.

ASV 256 Electrical and Electronic Systems 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 131 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students learn the theory and operation of automotive electrical systems. It includes the diagnosis and repair of automotive electrical lighting, instrumentation, convenience and accessory systems. There is a focus on advanced tools and techniques used to diagnose electrical and electronic systems found in today's modern automobiles. This course contains material previously taught in ASV 246.

ASV 257 Heating and Air Conditioning Systems 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 130 minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

Automotive heating and A/C systems are explored including servicing procedures and diagnostic techniques. A/C system diagnosis and repair are performed with a focus on the multiple types of control systems used in modern automobiles. The proper recovery, recycling and use of modern refrigerants are covered in this course. This course was previously ASV 247.

ASV 258 Engine Drivability 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 133 minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

This course is designed to provide the student with the experience needed to develop skills in troubleshooting and repairing drivability problems with engine management systems. This course details the study of fuel, ignition and emission systems as they pertain to engine drivability concerns. This course was previously ASV 248.

ASV 259 Diagnosis and Repair 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 130, ASV 131, ASV 132 and ASV 133, minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

This course is designed to provide the student with the skills necessary to diagnose and repair late model automobiles and light trucks in a repair facility environment. There is a focus on "road going" vehicle repair and diagnosis in this course. Students will experience the various roles they will encounter in a repair facility. This course was previously ASV 249.

ASV 263 Vehicle Performance 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 130, ASV 131, ASV 132 and ASV 133, minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

This course provides students with the knowledge and skills necessary to diagnose, measure and improve vehicle performance on late model automobiles. The course will cover the areas of basic power train performance, chassis design/dynamics, fuel/ignition systems and basic aerodynamics including safety improvements to meet performance gains.

ASV 267 Alternative Powertrain Technology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 131 minimum grade "C"
45 lecture, 30 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students will explore the theory and application of modern light-duty diesel engines in automobile and light truck applications. Students will learn about modern electric vehicle powertrains as well as diesel and alternative fuel systems. Students will develop the skills for diagnosis and repair of fuel and electrical systems. Turbochargers, blowers and catalytic converters, as well as particulate trap exhaust systems, will also be covered in this course. This course contains material previously taught in ASV 261 and ASV 262.

ASV 269 Performance Automotive 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 130, ASV 131, ASV 132, and ASV 133, minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

Select students taking this course will continue to develop skills and gain valuable information as it relates to the completion of a project vehicle. Areas of study include drivetrain, electrical systems, suspension, brakes, steering and final safety inspections. Students will work in conjunction with the Auto Body classes to complete a project vehicle.

ASV 270 Automotive Test and Development 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 131 and ASV 132, minimum grade "C"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will learn about the application of automotive testing systems used during the development of automobiles. Students will learn the principles of component testing. The focus of this course allows students to gain practical experience in the laboratory utilizing a mapping test stand that will analyze an engine assembly for defects. The students will enter engine defects and collect data using commonly accepted test procedures to validate the testing process.

ASV 274 ASV Co-op Education II 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses.

ASV 277 Automotive Powertrain Systems 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 131 and ASV 132, minimum grade "C"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will learn about the use of a chassis roll dynamometer for testing and validation of powertrain systems. Students will learn the principles of dynamometer operation including safety systems, road cycle testing, emissions testing, and durability testing. Students also gain practical experience in the laboratory, and develop and execute a test sequence for horsepower, emissions testing, and fuel system testing.

ASV 279 Automotive Dynamometer and Test 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 131 and ASV 132, minimum grade "C"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will learn about data acquisition methods used in modern automotive powertrain development. Students will learn the principles of strain gauge pressure sensors and Wheatstone bridge torque transducers. Students also gain practical experience in the laboratory, calibrating and validating the signals produced from a variety of automotive testing equipment. The students will develop and execute a test validation protocol on engine dynamometer stands.

Automotive Transportation Tech ATT

ATT 203 Lightening Materials in Transportation 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; WAF 105; WAF 139 or WAF 200; and MEC 101, minimum grade "C" for all courses

30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students will learn about lightweighting in transportation vehicles. Materials such as advanced reinforced plastics, carbon fiber, and titanium alloys are discussed. Students will research the role of lightweighting materials in reduced vehicle emissions and reduced fuel consumption and gain practical experience in the laboratory by executing a design and manufacturing project plan using carbon fiber layup using compression molding techniques.

Biology BIO

BIO 101 Concepts of Biology 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

Basic principles and concepts of biology are surveyed in lecture and laboratory. Emphasis is placed on biological processes as well as practical applications including (but not limited to) major units on chemistry, cells, genetics, cellular energy, kingdoms, reproduction, ecology, evolution and laboratory skills. This course serves as an introduction to biology for non-science students and may be used as a prerequisite for other biology courses.

BIO 102 Human Biology 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students will become familiar with the structures and functions of the human body, recent advances in human genetics, human health and disease, elements of a healthy lifestyle, human reproductive technology and human evolution. Students apply this information as they gain an understanding of human biology, and how they can contribute to their own health. The laboratory portion focuses on human structure and function using models, dissections, demonstrations and medical equipment.

BIO 104 Biology of Exercise 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students are introduced to the basic principles of exercise biology, including the physiological responses to acute and chronic exercise, the impact of heat, altitude and other environmental stressors on exercise performance and safety, and the metabolic basis for measurements of oxygen uptake during exercise. The role of each body system in strength and endurance exercise performance will be considered. The relationships between physical activity, body composition, and health will be examined.

BIO 107 Introduction to Field Biology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to the biology of the outdoors for the beginning student. Subjects such as native trees and shrubs, wild flowers, and various animals, pond and stream life, and different Michigan terrestrial and aquatic communities will be covered. An outdoor journal and other similar activities will be stressed.

BIO 109 Essentials of Human Anatomy and Physiology 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; high school biology or BIO 101 or BIO 102, minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students are introduced to the essential elements of human anatomy and physiology. It is intended for students entering programs in allied health, including radiography, medical coding and orthotics and prosthetics. This course is not appropriate for pre-nursing students.

BIO 110 Introduction to Exercise Science 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to the field of exercise science. The areas of exercise physiology, motor control, biomechanics, athletic training, and exercise psychology will be presented. Careers open to exercise science students will be explored.

BIO 111 Anatomy and Physiology - Normal Structure and Function 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; high school chemistry or CEM 101 and high school biology or BIO 101 or BIO 102 or BIO 161 or BIO 162; minimum grade "C" all BIO, CEM, and high school requirements
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course students will be given an intensive, in-depth introduction to the structure and function of all the body systems. Course topics include the following systems: integumentary, skeletal, muscular, nervous, cardiovascular, immune, respiratory, urinary, digestive and reproductive. Emphasis is on basic physiological principles, interrelationships among systems, homeostatic mechanisms and introductory disease processes. The laboratory component provides a unique hands-on learning experience for exploration of human body systems with the use of prosected cadavers. In addition, students complete lab exercises to enhance their understanding of basic physiology.

BIO 142 Fundamentals of Nutrition, Exercise and Weight Control 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Corequisites: PEA 115
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students explore the relationship between nutrition and energy expenditures as they apply to body mass regulation. Students will be introduced to concepts such as nutrition, metabolism, and energy transfer, exercise energy utilization, and the bioenergetics of food and activity. Students will assess body composition such as body fat and lean mass. Concepts of obesity, weight control, modification of eating and exercise behaviors, diet practices and psychosocial aspects of weight control will be discussed. The physiologic considerations in total fitness such as strength, anaerobic and aerobic power will be covered. This course was previously titled Introduction to Nutrition, Exercise & Weight Control.

BIO 147 Hospital Microbiology 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course is a brief introduction to topics in microbiology involving human health and disease. Biological characteristics of bacteria and viruses are described and selected pathogens are discussed. The innate and adaptive defenses of the human body against microbial pathogens are described. The course also discusses appropriate use of antimicrobics. Public health efforts to control pathogens are also discussed, including vaccination and infection control.

BIO 161 General Biology I Ecology and Evolution 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; high school biology or high school chemistry or high school environmental science or BIO 101 or CEM 101 or ENV 101; minimum grade "C" all BIO, CEM, ENV and high school requirements

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, biology majors are given a detailed study of the concepts and evidence in evolutionary biology, an inclusive look at modern systematics and taxonomic organizations of all living organisms, an in-depth examination of the biological features (anatomy, physiology, and behavior) of all major groups of living things, and the application of these concepts into ecological systems. Basic concepts of genetics will also be covered. This course is part of a two course sequence which serves as a comprehensive, year-long sequence for biology majors which can be completed in any order.

BIO 162 General Biology II Cells and Molecules 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; high school biology, or high school chemistry, or high school environmental science or BIO 101 or CEM 101 or ENV 101; minimum grade "C" all BIO, CEM, ENV and high school requirements

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course for biology majors, students are provided an introduction to the basic principles of biology and their practical applications. Topics include chemistry, cell biology and energetics, classical and molecular genetics and gene expression. Basic concepts of development, ecology, evolution and sustainability issues will be covered. Students will read and discuss scientific literature, write two formal lab reports and a short paper and complete relevant lab exercises, including an inquiry-based experiment. This course is part of a two course sequence that serves as a comprehensive, year-long sequence for biology majors and other interested students.

BIO 174 Biology Co-op I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required

0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

Co-op courses provide students with worksite skills and experiences in an approved, compensated position related to their chosen field of study. Together with an instructor, an employer, and the Workplace Learning Center, the student determines work assignments and learning objectives to connect learning with career-related work experience. Co-op experiences are coordinated by the Workplace Learning Center in conjunction with WCC faculty and cooperating employers. Registration for cooperative education requires attendance at a co-op orientation and the instructor's prior approval.

BIO 199 Anatomical Studies 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required

0 lecture, 0 lab, 0 clinical, 45 other, 45 total contact hours

This course provides individualized student experience in cadaver prosection under the supervision of WCC Biology faculty.

BIO 201 Physiology of Exercise 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 109, BIO 110, or BIO 111

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students are introduced to the basic principles of exercise physiology, including the physiological responses to acute and chronic exercise, the impact of heat, altitude and other environmental stressors on exercise performance and safety, and the metabolic basis for measurements of oxygen uptake during exercise. The role of each body system in strength and endurance exercise performance will be considered as well as the effects of regular exercise on health and aging.

BIO 208 Genetics 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 101 or BIO 102 and high school chemistry or CEM 105 or CEM 111; minimum grade "C" all BIO and CEM requirements

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course gives an introduction to the basic principles of genetics and their application to viruses, bacteria, plants, fungi, and animals, including humans. Classical and molecular genetic mechanisms are covered. Laboratory experiments demonstrate genetic principles and include classical and molecular techniques. Students who have taken one year of high school chemistry with a grade of C or better may have the prerequisites waived.

BIO 212 Pathophysiology: Alterations in Structure and Function 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 111 minimum grade "B-" and BIO 147 or BIO 237, minimum grade "C-"; BIO 147 or BIO 237, may enroll concurrently

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

The focus of this course is the application of the concepts of normal anatomy and physiology to the study of the disease processes in humans. The course includes identification of the etiology and pathogenesis of disease, alterations in normal body function, and the reaction and adaptation of the body to disease. This course was previously HSC 220.

BIO 215 Cell and Molecular Biology 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 101 or BIO 102 and CEM 105 or CEM 111; minimum grade "C" all BIO and CEM requirements

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course explores the smallest unit of living things, the cell, at the molecular and genetic level. A comparative cellular examination of the three domains provides an understanding of similarities of cells, while further study investigates differentiation and variation which leads to the diversity of life. Molecular pathways are dissected in both prokaryotic and eukaryotic cells focusing on their regulation and control. DNA technology, including genetic analysis of genomes, genetic engineering, gene therapy and cloning are also investigated. Laboratory topics focus on cell types and differentiation, enzymatic specificity and control, cellular respiration and DNA/molecular techniques.

BIO 225 Tests and Measurements in Exercise Science 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 110 and BIO 111 and BIO 201 and MTH 160; minimum grade "C" for all BIO and MTH requirements; BIO 111 and MTH 160 may enroll concurrently

30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students will integrate and apply the principles learned in the prerequisite courses. Students will learn to evaluate the strengths and weaknesses of scientific research in the field of exercise science, gain practical experience and expertise with widely used measuring instruments of physical performance and body composition and may choose to take the external certification examinations for personal trainer and health/fitness instructor.

BIO 227 Biology of Animals 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 101 minimum grade "C"

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is an intensive study of the diversity, evolutionary and environmental relationships, structures and functions of the major animal groups. Animals are studied with an emphasis on comparative anatomy and physiology, behavior, and ecology. Lectures will incorporate interactive discussions and activities that address our current understanding of animal biology. Laboratory topics will focus on taxonomy and anatomy using models, live specimens, behavioral experiments and dissection. The title of this course was previously Zoology.

BIO 228 Biology of Plants 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; high school biology or BIO 101, minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course introduces plant biology as a field of study and covers major topics, including: plant biochemistry, plant structure and function, plant growth, nutrition and regulation, genetically modified plants (GMO's), economic botany, plant evolution and classification of the major divisions focusing on flowering plants. The laboratory component emphasizes and compliments the lectures while focusing on plant cells, structure and function, photosynthesis, flowers, fruits and seeds, and growth and development through a typical plant life cycle. The title of this course was previously Botany.

BIO 237 Microbiology 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 101, BIO 111, BIO 161 or BIO 162, minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, the structure of microbes that have a significant impact on humans is described and their genetics introduced. The epidemiology and prevention of infectious disease as well as events involved in immunity and pathogenesis within the body are covered. Finally, infectious diseases of major body systems are surveyed. Basic microbiological skills are introduced in the lab.

Bricklayer-Allied Craftwkr App BAC

BAC 100 Labor and Trade Union History and Impacts 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

The history and future of labor and trade unions, with particular emphasis on the International Union of Bricklayer and Allied Craftsworker, will be explored. Topics also include objectives and methods of organized labor and the legal and institutional framework of collective bargaining. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 101 Safety Practices 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

The impact of the Occupational Safety and Health Act and obtaining the required certifications will be addressed. The purpose of this course is to teach job safety practices and procedures. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 102 Professional Skills Development 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course is an introduction to human relation skills needed on the job site. Workplace skills such as effective communication, motivation, working with supervisors, teamwork and Equal Employment Opportunity Commission (EEOC) will be covered. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 110 Introduction to Brick and Blocklaying Apprenticeship 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is the introduction to brick and block laying for new apprentices. Course topics include the expectations of the apprenticeship program, role of International Masonry Institute (IMI), quality assurance and the construction process. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 111 Introduction to Masonry Construction 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course introduces the basic concepts of masonry construction including how and where various materials are used and the required tools and equipment. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 112 Mortar Manipulation 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is an introductory course in the types and physical properties of mortars. An overview of mortar materials, the manufacture of mortar and the specific manipulations of mortar are also covered. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 120 Introduction to Tile Mechanic Apprenticeship 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course is the introduction to tile setting for new apprentices. Course topics include the expectations of the apprenticeship program, role of International Masonry Institute (IMI) and the construction process. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 121 Introduction to Tile Mechanic 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces the basic concepts of tile work including how and where various materials are used, adhesives and the required tools and equipment. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 122 Basic Tile Setting 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is an introduction to basic tile setting. Topics include surface preparation, substrate installation and cutting, setting and finishing tile. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 210 Introduction to Blocklaying 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The course topics include common concrete masonry units, parts of a block and wall, joints, bonds, procedures, techniques and steps to basic blocklaying. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 211 Introduction to Bricklaying 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers the basic principles and skills used in bricklaying. Topics include types and properties of brick, structural bonds and applying mortar. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 212 Masonry Wall Construction 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The purpose of this course is to teach the fundamentals of basic masonry wall construction and applicable reinforcement concepts. Types of masonry construction and their descriptions; methods of layout; bonds; veneer, composite, and cavity walls; openings; anchoring devices; and grouting are covered. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 213 Masonry Construction Techniques and Restoration 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will cover basic repair and restoration of masonry in addition to specialty masonry construction techniques. Topics include cleaning, pointing, arches, brick pavers, structural glazed tiles, fireplaces and chimneys. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 220 Wall Tile Installation 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to installing wall tile. Methods of installing wall tile on concrete, wood, gypsum board, glass fiber mesh and reinforced board will be covered. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 221 Floor and Stair Tile Installation 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will cover basic installation of floor and stair tile. Methods of installing tile on interior wood and cement subfloors and concrete, wood and metal stairs will be included. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 222 Applications for Tile Installation 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to the application of tile installations. Bathtub, shower, foundation, curbs, countertop, ceiling/soffit, mantel, hearth and swimming pools tile installation will be covered. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 223 Tile Layout, Techniques and Restoration 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will cover tile layout, techniques and restoration. Topics will include layout design principles, renovation and repair, cleaning, caulking, quarry tile, domes, arches and columns. This course is only available for Bricklayer and Allied Craftworker apprentices.

Business Management BMG

BMG 101 Entrepreneurship I: Finding Your Opportunity 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is intended for those who have aspirations of creating business opportunities from scratch whether they are an inventor, artist, employee, manager, or entrepreneur. Students assess their skills, attitudes, and behaviors related to entrepreneurial and innovative mindsets. Concepts and exercises focus on practical and repeatable processes and applications that identify unmet customer needs in order to generate ideas that become an innovation of value. The title of this course was previously The Business of Your Career.

BMG 109 Entrepreneurship II: Starting Your Business 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will experience real-world and hands-on activities needed to start a business. Talking with customers, partners, competitors, and advisors will provide valuable input as students explore the various facets of a business and how they interact to produce a working business model. Students completing this course will be able to answer the question, "Will anyone other than you want your product or service?", and be well-positioned to write a business plan. This title of this course was previously Starting Your Business.

BMG 111 Business Law I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will cover text and case study of the general laws applicable to business, covering the nature of law, courts and court procedures, contracts, real and personal property, wills, trusts, and negotiable instruments. This course is appropriate for students intending to transfer.

BMG 140 Introduction to Business 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers functions, objectives, problems, organization, and management of modern business. Also covered are the free-enterprise system of business-economic activity and the impact of the consumer and governmental forces upon the system. Students develop insight into the vital role of the administrative function in our economy as a whole and in the operation of a single business unit. A practical orientation is offered in the career opportunities available in business and industry.

BMG 150 Labor-Management Relations 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The purpose of this course is to provide students with an understanding of management and labor roles in society and the impact of their relationship on company policies and practices. Students will acquire a basic knowledge of collective bargaining, negotiations, and a framework for analysis of labor relations problems.

BMG 155 Business on the Internet 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course explores ways businesses are leveraging Internet technologies and tools in marketing and operational strategies. Students will learn the history of the Internet and the evolution of e-commerce. The course will cover terms and strategies related to online retailing, advertising, social media, business operations, new ventures and emerging technologies.

BMG 160 Principles of Sales 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The purpose of this course is to provide students with an understanding of the responsibilities and ethics of a salesperson, effective prospecting skills, preparing customer presentations, handling customer objections, closing a sale, and understanding the basics of a business to business contract.

BMG 174 BMG Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, business-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two co-op courses.

BMG 181 Introduction to Supply Chain Management 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are provided with the foundational knowledge they will need to understand the world of supply chain and related core competencies. At the end of the course, students will be given the opportunity to earn nationally recognized certification for portfolio development. The course includes modules on the global supply chain, the logistics environment, safety, safe equipment operation, material handling equipment, quality control, workplace communication, teamwork and problem-solving using computers. This course contains material previously taught in BMG 180.

BMG 182 Warehousing and Logistics 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are provided with the mid-level technical knowledge needed to understand the world of supply chain and related core competencies. At the end of the course, students will be given the opportunity to earn nationally recognized certification for portfolio development. The course includes modules on product receiving and storage, order processing, packaging and shipment, inventory control, safe handling of hazardous materials, evaluation of transportation modes, customs, and dispatch and tracking operations. This course contains material previously taught in BMG 180.

BMG 200 Relationship Skills in the Workplace 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to human relations skills (interpersonal, intrapersonal and leadership) necessary to build and manage cooperative relationships that result in a positive, productive work environment. Students will explore the human relations aspect of management responsibility as it affects employee attitudes, morale, and performance. Emphasis is on relationships among individuals and/or small groups with problem solving activities that relate course material to human relations in business. The title of this course was previously Human Relations in Organizations.

BMG 201 Entrepreneurship II - Market Planning 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BMG 109 minimum grade "C-", may enroll concurrently or equivalent business experience
Level II Prerequisites: CIS 099 with grade "P"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students learn how to identify a target market that provides a continuous competitive advantage to the small business owner by performing market research. Students will complete a plan of marketing which includes an evaluation of profit potential. This course was previously BMG 292.

BMG 205 Creating the Customer Experience 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn how to create a highly-evolving customer experience in order to build customer loyalty, word-of-mouth customers, and in turn, organizational success. Students apply the core concepts to develop customer experience strategies with a focus on enhancing the quality of the interactions between the service provider and the client/customer. Finally, students refine their personal skills needed to be successful in our constantly changing and customer-centric business environment.

BMG 206 Retail Principles and Practices 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers the managing, marketing, selling, promoting and distributing of retail goods and services. Students will learn the conceptual, theoretical and strategic framework of fundamental retail management principles blended with the practical applications of retailing policies, methods and procedures. Students will learn to apply their understanding of the retailing environment and evaluate the financial implications of their retail decisions to prepare them for a career in the retail industry.

BMG 207 Business Communication 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

By studying the principles, processes and strategies underlying effective business communication, students will develop career-enhancing oral, written, and non-verbal skills. Emphasis is placed on planning, creating and transmitting business information within a variety of business situations found in the global marketplace. Students will prepare routine correspondence, reports, resumes, and formal business presentations.

BMG 209 Entrepreneurship III - Running and Growing Your Business 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BMG 109 minimum grade "C-", may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students with a solid business model or operating business will learn, through the development of a business plan, how to build a solid foundation for running and growing their business. The focus of the course will be on the financial, marketing, and operational functions within a business necessary for sustained growth and success. This course contains material previously taught in BMG 102.

BMG 220 Principles of Finance 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ACC 111 or ACC 122
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course surveys the basic concepts of finance that provide the foundation for successful real world financial management practices. Emphasis is on financial tools required to operate a business. Included is the role of the economy and its effect on interest rates, commercial banking practices, commercial credit, cash management, lending practices, financial statement analysis, time value of money, forecasting, budgeting, capital budgeting, sources of financing, lease vs. purchase, leverage, inventory controls, valuation of rates of return, investment banking, international finance, and bankruptcy. The course is intended to prepare students for advanced studies in finance and practical application of financial principles.

BMG 226 Transportation and Logistics 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will develop knowledge, skills and comprehension of transportation and logistics management, since transportation expense often represents one of the largest single costs faced by a company. It will cover how transportation moves materials, products, information, and finances through the global supply chain, increases a company's competitive advantage, and differentiates an organization from the competition. Students will learn how to analyze a firm's supply chain, develop a broad transportation strategy, create a detailed implementation plan, and then evaluate the results to make further improvements. The title of this course was previously Transportation Management.

BMG 228 Purchasing and Inventory Control 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will learn about the practices related to strategic and operational purchasing, buying, and supply management throughout the supply chain. A key component of the purchasing function is inventory control and management so students will also learn practices for determining product assortments, acquiring and replenishing stock, and reducing excessive inventory. Finally, students will learn to perform the business math calculations related to all aspects of purchasing and inventory control. This course contains material previously taught in BMG 211 and BMG 227.

BMG 230 Management Skills 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers management concepts and principles that supervisors and managers use in daily activities. Students will acquire the skills needed to plan, organize, staff, and control an operation. Structured and creative approaches to problem-solving will be explored. This course contains material previously taught in BMG 208 and BMG 230.

BMG 240 Human Resources Management 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers essential human resources activities that must be managed in any organization: employee retention, staffing, compensation, job evaluation, performance management, collective bargaining, safety, employee rights, benefits, pensions, and employment laws.

BMG 250 Principles of Marketing 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will gain an understanding of marketing strategy, segmentation, differentiation, buyer behavior and emerging technology tools for marketers. The course also focuses on marketing decisions, with emphasis on the key strategy decisions in each area of the marketing mix: product, place, promotion and pricing.

BMG 265 Business Statistics 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4 or MTH 125 or MTH 160, minimum grade "C"; CIS 100 or CIS 110
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces the concepts of statistics and their application to business decisions. Topics include elements of data set description, probability, random variables, sampling distributions, mean and proportion estimation, hypothesis testing, and regression and correlation analysis. Emphasis is on the application of appropriate statistical methods to analyze data for the purpose of making sound business decisions.

BMG 273 Managing Operations 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces students to the fundamental processes of managing and controlling a variety of operations. It includes concepts in operations management that are recognized as important factors in business such as work processes, project management, scheduling and inventory management, quality tools, managing human resources on projects and in teams, and customer management. It is recommended that students have basic supervision knowledge obtained from previous coursework or work experience.

BMG 274 BMG Co-op Education II 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BMG 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, business-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses.

BMG 275 Business and Supply Chain Analytics 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course introduces students to a structured and logical approach to problem solving and decision making in business and supply chain situations. Students will have hands-on work using standard problem solving and decision-making tools, including the Excel data analysis tools. While gaining this extensive Excel hands-on experience, students also explore the challenges associated with data driven decision making.

BMG 279 Performance Management 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to provide the student with the human performance skills needed to develop people in an environment that recognizes that they are an organization's most valuable resource. Through the use of skill-building exercises and case analysis, the learner will develop knowledge and skills to plan, monitor, measure, motivate, improve and reward performance.

BMG 285 Applied Data Analytics 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BMG 265, BMG 275 and CIS 282, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will be introduced to the fundamental concepts of "Big Data" management and data science analytics, learning to recognize the challenges faced in dealing with massive volumes of available data as well as in proposing scalable solutions for them. This course is highly interactive, using case studies that span multiple vertical industries to process and analyze data related to common business issues. The title of this course was previously Meeting Management.

BMG 291 Project Management 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will learn and utilize the Project Management Methodology along with the general functions of management. Using project management software, team strategies, business applications and effective communication controls, students will plan and manage projects. The course will cover the following project management knowledge areas as outlined by the Project Management Institute: integration management, scope management, time management, cost management, human resources management, and communications management.

BMG 295 Supply Chain Field Studies 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BMG 181 and BMG 182 or BMG 206; minimum grade "C" all BMG requirements; may enroll concurrently
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students will apply their knowledge of retail and supply chain management by conducting a business analysis which integrates the concepts, principles and practices learned in prerequisite courses. Students will analyze the environment, operations, marketing, and personnel aspects of a business. They will describe the findings in a final report that demonstrates an understanding and real-world application of managing in retail and supply chain organizations. The title of this course was previously Capstone: Retail Management.

Business Office Systems BOS

BOS 101A Introduction to Keyboarding 1 credit

Level I Prerequisites: No Basic Skills
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course is the first in a series of three keyboarding courses. This course teaches students to keyboard by touch and develop speed, accuracy, and proper techniques on the alphabetic keys. This course is offered only in a self-paced format.

BOS 101B Intermediate Keyboarding 1 credit

Level I Prerequisites: No Basic Skills
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course is the second in a series of three keyboarding courses. It is designed for students who have completed BOS 101A or who can key a minimum of 24 wpm. Students increase their speed and accuracy, improve their technique, and learn to touch key the number and symbol keys. Students are evaluated early and may be placed in BOS 101A or BOS 101C based on the results of the evaluation. This course is offered only in a self-paced format.

BOS 101C Advanced Keyboarding 1 credit

Level I Prerequisites: No Basic Skills
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course is the third in a series of three keyboarding courses. It is designed for students who have completed BOS 101B or who can key a minimum of 33 wpm. Students increase their speed and accuracy, improve their technique, and learn to touch key the number and symbol keys. Students are evaluated early in the course and may be placed in BOS 101A or BOS 101B based on the results of the evaluation. This course is offered only in a self-paced format.

BOS 106 Electronic Planning, Sharing and Organization 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this class, students explore the usage of a note-taking and information-management program that allows users to capture ideas and store information electronically. Students will also be introduced to the benefits of cloud computing as a means to store, organize and share information with others and will learn effective collaboration techniques for working on business, school, or personal projects. Topics include Windows fundamentals, file and folder management, searching for and evaluating information found on the internet and using email. Software topics covered in this course include Microsoft Excel, OneNote, PowerPoint and Word.

BOS 157 Word Processing and Document Formatting I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course teaches word processing and document formatting using Microsoft Word. Skills include formatting and editing documents; using grammar and thesaurus functions; applying character, paragraph, and section formatting; preparing headers and footers; using file management procedures; preparing labels and envelopes; and formatting columns. The application of word processing concepts and functions to current business environments is stressed. Students should be familiar with Windows and have keyboarding skills of at least 25 wpm.

BOS 174 BOS Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Eight credits in BOS discipline, minimum 2.0 GPA; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, business-related position. Together with the instructor, the employer, and the co-op placement office, students determine work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two-co-op courses.

BOS 182 Database Software Applications 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course teaches database concepts and applications using Microsoft Access. Skills and concepts include creating databases; creating and customizing tables and forms; creating, formatting, and enhancing reports; querying and maintaining databases; enhancing forms; and filtering data. Applying database concepts, design, and functions used within business environments is emphasized. Students should be familiar with Windows and have keyboarding skills of at least 25 wpm.

BOS 184 Spreadsheet Software Applications I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are taught introductory spreadsheet concepts and applications using Microsoft Excel. Skills and concepts include creating, formatting and editing a worksheet; entering formulas and using Excel functions; preparing charts; creating templates, workbooks, and saving a workbook as a Web page. Applying spreadsheet concepts and functions to business environments is stressed. Students should be familiar with Windows and have keyboarding skills of at least 25 wpm. This course contains material previously taught in BOS 183.

BOS 206 Personal Management Application and Internet Resources 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course provides an introduction to the operational and technical aspects of communication using Microsoft Outlook and Internet resources. Topics covered include email, contact and task management, electronic scheduling and using the Internet for common business and social media interactions. Students should be familiar with Windows and have keyboarding skills of at least 25 wpm. The title of this course was previously Scheduling and Internet Office Applications.

BOS 207 Presentation Software Applications 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students are introduced to presentation software concepts and applications using Microsoft PowerPoint in a Windows operating system environment. Skills and concepts include creating, editing, formatting, and enhancing presentations; adding graphics and multimedia; using embedded elements to enhance a slide show; and delivering presentations. Applying presentation software concepts and functions to business environments is stressed. Students should be familiar with Windows and have keyboarding skills of at least 25 wpm.

BOS 208 Desktop Publishing for the Office 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will prepare students to apply basic publishing skills while creating flyers, newsletters, brochures, letterhead, business cards, and other publications. The course will enable the student to create a publication from scratch or use a template with a business information set. Students will create, manage, revise and distribute publications. Students must be familiar with Windows and have keyboarding skills of at least 25 wpm.

BOS 230 Electronic Forms Design 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will learn how to create, edit and use electronic forms. Electronic forms are less costly than paper forms, improve accuracy with data validation and acquisition, are more accessible, enhance the rate and timeliness of responses to questionnaires, and eliminate mailing costs. Students will also distribute PDF business documents, publish them to the web, and tabulate user responses. The software used for this course includes Adobe Acrobat and Microsoft Word.

BOS 250 Office Administration 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BOS 157
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will be introduced to the functions and roles of technology in a business office environment. Emphasis is placed on the expanding duties of an administrative professional such as time management, business composition, human relations skills, teamwork, office environment, and multi-cultural business etiquette. Importance is placed on verbal and written communication. Students develop effective job-hunting techniques and a portfolio to prepare for employment in the administrative field. To be successful in this class, students should be familiar with Windows and keyboard at least 25 wpm. This course contains content previously taught in BOS 107. The title of this course was previously Office Administration II.

BOS 257 Word Processing and Document Formatting II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BOS 157
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is the second of two courses in word processing and document formatting. Students are introduced to advanced word processing formatting and functions such as macros, styles, templates, graphics, Web pages, versions, forms, WordArt, Draw, outlines, indexes, and mail merges. The formatting of memos, letters, reports and specialized documents according to current business standards is emphasized throughout the course. Students should be familiar with Windows.

BOS 274 BOS Co-op Education II 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BOS 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, business-related position. Together with the instructor, the employer, and the co-op placement office, students determine work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two-co-op courses.

BOS 284 Spreadsheet Software Applications II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; BOS 184 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is the second of two courses in spreadsheet applications. Advanced techniques using Microsoft Excel in the work environment will be stressed. Skills and concepts include working with named ranges and structured references, using auditing tools to analyze data, creating scenarios, creating data maps and pivot tables, creating and using macros, and using workbook protection. Group participation in solving complex formulas and functions is part of this course. This course contains material previously taught in BOS 183.

Chemistry CEM

CEM 101 Introductory Chemistry 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students are exposed the general concepts of chemistry such as state of matter, classification of compounds, atomic structure, density, types of chemical reactions, gas laws and stoichiometry. Students will be introduced to best practices and use chemical laboratory procedures to perform experiments, collect data and calculate results. Students with no backgrounds in high school chemistry or who have not had high school chemistry for 4 or more years may wish to take this class before taking CEM 105 or CEM 111. This course contains material previously taught in CEM 090.

CEM 102 Chemistry for Elementary Teachers 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is designed for students who are planning to teach in elementary schools. It outlines the basic concepts of chemistry such as atomic structure, matter, energy and bonding. The laboratory portion emphasizes the discovery approach using simple equipment and chemicals that are easy to obtain and safe to use around grade school children.

CEM 105 Fundamentals of Chemistry 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; high school chemistry taken in the 2 years prior to enrolling in this course or CEM 101, minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

Students with an interest in nursing or other health related areas, or needing a general science elective, find that this broad survey of the major topics in chemistry including states of matter, physical and chemical changes, stoichiometry, atomic and molecular structure, gases and gas laws, electronic structure, periodic properties, chemical bonding, energy and heat, intermolecular forces, acids/bases and redox reactions meets the requirements of their program.

CEM 111 General Chemistry I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MTH 169 or higher (excludes MTH 178 and 181); high school chemistry (taken within last 5 years) or CEM 101 (taken within last 5 years), minimum grade "C" all CEM, MTH and high school requirements
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course covers the major topics in chemistry including states of matter, physical and chemical changes, stoichiometry, atomic and molecular structure, chemical bonding, thermochemistry and intermolecular forces. It is intended for students in a professional or pre-professional curriculum. Students need intermediate algebra skills to be successful in this course.

CEM 122 General Chemistry II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CEM 111 (within past 5 years) and MTH 176, both minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is the second of a two-course sequence in general chemistry for pre-professional and liberal arts students. This course develops the concepts of chemical kinetics, chemical equilibrium, chemical thermodynamics and electrochemistry. The ability to solve mathematical equations involving logarithms and exponentials is essential to success in this course.

CEM 140 Organic Biochemistry 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CEM 105 or CEM 111, minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is an introduction to both organic chemistry and biochemistry for nursing and other health services students. Major topics covered are the structure and functional groups of organic compounds, structures of biological molecules, mechanism of enzyme-catalyzed reactions, metabolism and bioenergetics.

CEM 211 Organic Chemistry I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CEM 122 minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is the first in a two-semester sequence in organic chemistry. Students will learn the nomenclature of organic compounds, stereochemistry, preparation and reactions of aliphatic and aromatic compounds. In the laboratory students will practice the preparation and handling of organic compounds, including purifying and characterizing organic compounds.

CEM 222 Organic Chemistry II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CEM 211 minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is the second of a two semester sequence. In this course, students will continue to learn nomenclature, stereochemistry, preparations, and reactions of organic compounds (aromatic compounds, organic oxygen and sulfur compounds, carbonyl compounds, carboxylic acids, amines) and biological compounds. Students will apply this knowledge by developing reaction sequences that can be used to synthesize various organic compounds from given starting materials. In the laboratory students will learn how to synthesize and isolate organic compounds and then characterize them using spectroscopic methods.

Child Care Professional CCP

CCP 101 Child Development 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides a general overview of the physical, social, emotional and intellectual development of the child from conception to adolescence with emphasis on the young child. It examines the environmental, ethnic and familial factors that make for group differences and individuality of growth, and reviews current research in these areas.

CCP 113 Health, Safety and Nutrition for Child Care 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 101 minimum grade "C" and HSC 131 with grade "P"; both courses may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Best practices in health, safety and nutrition are presented. Students develop specific competencies in these areas including establishing and maintaining a healthy, safe child care program, planning nutritious meals and snacks, and teaching children and their parents about health, safety and nutrition. Communicable diseases, government funded child/family food and nutrition programs, playground and toy safety and resources for the child care provider are included.

CCP 122 Essentials of Early Care and Education - I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required

Level II Prerequisites: The national CDA certificate requires reflective assignments on current work with children for a total of 480 hours of direct work with children ages 5 and younger.

Corequisites: CCP 132

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course provides an overview of the basic components of early child care and education. Students gain knowledge of six of the CDA competency standards: safety, health, learning environment, families, program management and professionalism.
Enrollment restrictions per state child care regulations. Student must be 18 years of age with a high school diploma/GED or concurrently enrolled in a state approved vocational high school child care program to register for this course. Concurrent enrollment in CCP 132 is required. The title of this course was previously Child Development Credentialing I.

CCP 123 Essentials of Early Care and Education - II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required

Corequisites: CCP 133

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course provides an overview of the essential elements of child care and early education and provides part of the formal training for the national child care credential, the Child Development Associate (CDA). Seven of the CDA functional areas are included: physical, cognitive, communication, creative, self, social, and guidance. Students must be at least 18 years of age with a high school diploma/GED or be concurrently enrolled in a state approved vocational high school child care program to register for this course. The national CDA certificate requires reflection on assignments on current work with children. Concurrent enrollment in CCP 133 is required. The title of this course was previously Child Development Credentialing II.

CCP 124 CDA Assessment Preparation 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 122, CCP 123, CCP 132 and CCP 133; consent required

15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, candidates for the Child Development Associate (CDA) national child care certificate are assisted in preparing for assessment. Students will receive assistance with preparing the Professional Portfolio and preparing for the Verification Visit by the CDA Specialist and the CDA exam. Students must have completed 120 clock hours of approved instruction in the 13 CDA functional areas and eight subject areas required by the CDA Council and submit proof of this training to enroll.

CCP 132 Child Development Practicum I 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required

Corequisites: CCP 122

0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students work in a licensed child care facility for a minimum of 120 clock hours. Placement is not provided by the college. Students will demonstrate competence in the CDA functional areas: safety, health, learning environment, working with families, program management and professionalism during a supervised work experience. Documentation of 120 clock hours of experience in a licensed child care center with infants and toddlers or preschoolers, or licensed family child care home is required. Observations are completed at the work site by a practicum instructor during regular hours of operation using CDA standards. Concurrent enrollment in CCP 122 is required.

CCP 133 Child Development Practicum II 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
Corequisites: CCP 123
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students work in a licensed child care facility for a minimum of 120 clock hours. Placement is not provided by the college. Students will demonstrate competence in the CDA functional areas: physical, cognitive development, communication, creativity, self, social and guidance during a supervised work experience. Documentation of 120 clock hours of experience in a licensed child care center with infants and toddlers or preschoolers, or licensed family child care home is required. Observations are completed at the work site by a practicum instructor during regular hours of operation using CDA standards. Concurrent enrollment in CCP 123 is required.

CCP 160 Foundations of Child Care and Early Education 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 101 minimum grade "C", may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides an overview of the theories and philosophies that have shaped modern child care and early childhood education programs. A history of the field, current issues and future developments in the profession are covered. State licensing requirements, national accreditation standards, state and national curriculum standards, and quality indicators are emphasized in relationship to establishing and operating programs for children from birth through age twelve.

CCP 200 Working with Families in a Diverse Society 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 101 minimum grade "C"

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course explores the parent - professional partnership. Emphasis is on increasing knowledge and skills for working with diverse families, family differences and functions, communication strategies, and methods for increasing parent involvement in facilitating optimal child development. Advocacy on behalf of children and families, and resources for the professionals are also included. A supervised practicum is a prerequisite for this course. This title of this course was previously Working with Parents.

CCP 204 The Developing Professional in Early Childhood Education 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 200 or CCP 220, minimum grade "C"; ENG 226 minimum grade "C"; MTH 149 minimum grade "C"; 45 Early Childhood Education program credits; consent required
Corequisites: CCP 205
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

Students use a reflective-inquiry approach to understand how child development theories and evidence-based practices are used as the basis of quality early childhood education programs. Skills in observation, understanding adult-child interactions, child guidance, diversity, curriculum content areas and classroom environment are explored.

CCP 205 Practicum for the Developing ECE Professional 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 101 minimum grade "C"; consent required
Corequisites: CCP 204
0 lecture, 0 lab, 0 clinical, 36 other, 36 total contact hours

This course provides an introduction to the early childhood education classroom setting. Students volunteer in a pre-approved early childhood classroom under the guidance of a master teacher for three hours a week for a minimum of 12 weeks during the semester (minimum of 36 clock hours).

CCP 209 Curriculum for Young Children 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 101 minimum grade "C"; CCP 132 and CCP 133
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides an overview of curriculum for young children from birth to age twelve with emphasis on two through five years old. The focus is on developing multi-cultural/anti-bias curriculum activities that are developmentally appropriate for various ages and stages of development. Experience with children in a group setting during the semester is required. Students with a National CDA certificate may request an override for CCP 132 and CCP 133.

CCP 210 Child Guidance and Classroom Management 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 101 minimum grade "C"; CCP 132 and CCP 133
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This comprehensive course focuses on child guidance and classroom management for the child care provider and adults working with preschool and elementary school aged children in educational and recreational settings. Emphasis is placed on the social and emotional development of children from birth through age 12 and developmentally appropriate guidance strategies. This course meets Positive Behavior Support Standards for the Michigan Department of Education (2000). Current work experience with children age 12 or younger is required. Students with National CDA certificate may request an override for CCP 132 and 133. This course was previously CCP 110.

CCP 211 Administration of Child Care Programs 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 113, CCP 122, CCP 123 and CCP 209, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course meets Michigan's child day care administration requirement for program directors and site supervisors. The basis of effective program management is reviewed. Students acquire knowledge of policies relating to children, staff, parents and center operations. Students write policies and procedures required of a program director in Michigan and collect resources needed by an effective program manager. Students who possess the National Child Care credential (CDA) or other professionals who qualify for an administration course should contact the instructor for permission to register.

CCP 218 Advanced Child Care Seminar 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 209 minimum grade "C"; Completion of 50 credit hours in CCP program requirements; consent required
Corequisites: CCP 219
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course focuses on leadership and curriculum skills needed as a director or lead teacher in a child care center. Students refine skills in developing and evaluating sequences of developmentally appropriate learning activities for young children. Students plan and execute a leadership project. Confirm eligibility and suitable employment in a licensed child care center with the program adviser prior to enrolling.

CCP 219 Advanced Child Care Practicum 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 209 minimum grade "C"; Completion of 50 credit hours in CCP program requirements; consent required
Corequisites: CCP 218
0 lecture, 0 lab, 0 clinical, 240 other, 240 total contact hours

During this supervised practicum experience, students assume the lead teacher role for a minimum of two weeks. Students implement planned activities, refine curriculum planning and evaluation skills, develop skills in self-assessment and program evaluation, and keep a reflective teaching journal. Employment in a licensed child care center is required. Students must meet with a program advisor prior to enrolling in the course.

CCP 220 Development and Care of Infants and Toddlers 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 101 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course focuses on the normal development of infants and toddlers. Emphasis is on the care and education of infants and toddlers in licensed group settings with attention to physical environment, equipment and materials and care giver strategies.

CCP 251 Education of the Young Child with Exceptionalities 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 101 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course presents an overview of the major categories of exceptionality. Methods for identifying and working with young children in child care, recreational and educational settings are explored. Working with an interdisciplinary team and partnering with parents is a major focus. A working knowledge of resources, a comfort level for working with exceptional children and their families, and exploring the roles of professionals who work with exceptional populations are stressed. This course was previously titled Education of Exceptional Children.

Chinese CHN

CHN 111 First Year Chinese I 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students will be introduced to Modern Standard Chinese, also called Mandarin-Putonghua (Common language) and Guoy (National language). The essential knowledge of both Chinese characters as well as grammatical structures will be imparted for the language acquisition of written Chinese. Students will gain listening, speaking, reading and writing skills in standard Chinese, attaining approximately the high novice level on the ACTFL proficiency scale. Students with prior knowledge of Chinese are welcome in this class.

CHN 122 First Year Chinese II 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Reading and Writing Level 6; CHN 111 minimum grade "C" or score of 321-380 on the Chinese placement exam
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This course is a continuation of Chinese 111 and focuses on consolidating previously learned language skills, and improving and expanding correct tonal range. Students will focus on understanding the systematic nature of Chinese characters including the order of strokes, and the radical and the function of their phonetic and semantic components. The relationship between Chinese language and ways of life, as well as the use of language according to social settings, will be emphasized throughout the semester.

Clinical Medical Certification CMC

CMC 114 Patient Care Skills 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; Admission to the Medical Assisting program; BIO 109 or BIO 111, minimum grade "C+"; HSC 101 minimum grade "C+";
45 lecture, 30 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students practice therapeutic communication with patients. Students will learn to assess patient conditions and provide quality care. Topics may include: vital signs, applying various wound dressings, capillary puncture, suture removal, patient preparation and transfer techniques and infection control practices.

CMC 116 Introduction to Clinical Skills 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; Admission to the Medical Assisting program; BIO 109 or BIO 111, minimum grade "C+"; HSC 101 minimum grade "C+"

30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours

Through class discussion, lecture, video and clinical simulation, students will be introduced to safety and emergency protocols and legal and ethical practices in the ambulatory setting. The title of this course was previously Clinical Application Skills.

CMC 121 Pharmacology for Medical Assisting 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Medical Assisting program; BIO 109 or BIO 111, minimum grade "C+"; HSC 101 or HSC 124, minimum grade "C+"

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will acknowledge the main therapeutic effects, clinical uses, and adverse reactions of commonly prescribed medications. Students will be introduced to the human diseases associated with specific body systems and the pharmacology used to treat such diseases. Topics include modalities for diagnostic testing and pharmaceutical treatment of patient conditions in an ambulatory setting. The title of this course was previously Human Disease and Pharmacology.

CMC 226 Administrative Functions for Medical Assistants 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; Admission to the Medical Assisting program; BIO 109 or BIO 111, minimum grade "C+"; HSC 101 minimum grade "C+"

45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students focus on the role and function of the daily activities of a medical assistant. By applying concepts, skills, theory, and behaviors in the ambulatory setting, students will become familiar with proper applications within their legal scope of practice.

CMC 228 Skill Assessment for Medical Assistants 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; Admission to the Medical Assisting program; BOS 185, CMC 114, CMC 116 and CMC 226, minimum grade "C+" in all courses

15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will focus on practical integration and application of knowledge, skills and behaviors learned in previous courses in preparation for their practicum. Tasks may include preparing patients for exams, taking vital signs, documenting information, communicating effectively, performing diagnostic testing, and administering medications. The title of this course was previously Capstone Experience.

CMC 230 Laboratory Procedures for Medical Assistants 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; Admission to the Medical Assisting program; BOS 185, CMC 114, CMC 116 and CMC 226, minimum grade "C+" in all courses

0 lecture, 75 lab, 0 clinical, 0 other, 75 total contact hours

In this course, medical assisting students will gain practical experience in the collection and handling of various specimens in the laboratory. Students will perform and document test results such as: blood tests, ECG's and Spirometry. Lab activities performed may include obtaining cultures, basic microbe identification, routine urinalysis, hematology and other basic Non-CLIA lab testing. Students will practice skills such as: interviewing and educating patients and explaining test results. The title of this course was previously Laboratory Procedures.

CMC 290 Practicum Seminar 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Medical Assisting program; CMC 121, CMC 228, CMC 230, MTH 167 and PHL 244, minimum grade "C+" in all courses
Corequisites: CMC 299
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, while students are completing their practicum experience, they will communicate progress and experiences through blogs, journals, and discussion board posts. Upon completion of their practicum hours, students will prepare a final presentation for the class about their experience. The title of this course was previously Clinical Experience Seminar.

CMC 299 Practicum for Medical Assistants 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; Admission to the Medical Assisting program; BOS 185, CMC 228, CMC 230, MTH 167 and PHL 244, minimum grade "C+" in all courses
Corequisites: CMC 290
0 lecture, 0 lab, 160 clinical, 0 other, 160 total contact hours

This is a 160-hour unpaid supervised practicum with a licensed healthcare practitioner. Procedures will be performed in a medical office, clinic, or other ambulatory healthcare setting. Each student will demonstrate knowledge and skills of the academic subject required for competence in the profession. The title of this course was previously Practicum.

Collision Repair Technician CRT

CRT 202 Refinish Technician I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 123 and ABR 124, minimum grade "B"; ABR 113 or ABR 135, minimum grade "B"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will continue their training in advanced refinishing techniques. Proper spray-gun set-up and operation will be covered. Other course topics such as the use of job specific tooling that aids in the jigging of small parts, information on the use and application of masking materials, problem-solving and time management skills will be covered. Actual vehicles, used as training aids, will complement information presented on masking for primer, paint and spot repairs. Color theory and how to effectively tint solid and metallic colors to achieve a blendable color match and advanced refinishing techniques will also be discussed. This course contains material previously taught in CRT 200 and CRT 240.

CRT 203 Collision Technician I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 123 and ABR 124, minimum grade "B"; ABR 113 or ABR 135, minimum grade "B"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will study advanced repair techniques such as damage analysis, the use of computerized frame equipment, panel sectioning and non-structural collision repair. Lab activities will include the selection of proper tools to repair or replace collision damaged parts on vehicles. Students learn to repair structurally damaged conventional frame and unitized bodies. Topics such as vehicle set-up procedures and the use of hydraulic frame straightening equipment, along with body and frame construction will be covered. Information concerning mechanical component replacement, as related to the collision repair industry, is also presented. This course contains material previously taught in CRT 201 and CRT 241.

CRT 222 Refinish Technician II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CRT 202 minimum grade "B", may enroll concurrently
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will apply advanced collision refinishing training in "real world" situations. They will perform light to medium level refinishing operations on college-owned vehicles. Solid and metallic base-coat/clear-coat and single stage paint systems will be areas of focus. Panel refinishing, blends, and "cut-ins" will be some of the topics covered. Also covered are crucial final detail and inspection information that the modern refinish technician must know in order to effectively release a vehicle back to its owner. Additional topics such as interior and exterior care, buffing, glazing, waxing, overspray removal, leak detection, engine bay reconditioning and preparing vehicles for resale, will be covered. This course contains material previously taught in CRT 220 and CRT

260.

CRT 223 Collision Technician II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CRT 203 minimum grade "B", may enroll concurrently
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will be introduced to outer panel replacement including quarter panels, box sides, door skins, rocker sections, core supports, and various other weld-on panels. Selection and proper application of tools and equipment will be emphasized. This course contains material previously taught in CRT 221 and CRT 261.

Communication COM

COM 101 Fundamentals of Speaking 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Through the use of practical experience, students acquire the essential speaking and listening skills which are the most sought-after skills in the work world. Students work to relieve the stress which the average person encounters in public speaking. Students will learn organizational and delivery skills, as well as gaining a heightened awareness of the relationship between a speaker and an audience.

COM 102 Interpersonal Communication 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This interactive course introduces basic aspects of interpersonal communication that influence the quality of personal and workplace relationships. Aspects of ineffective communication behaviors that create misunderstanding are presented. The impact of effective and ineffective interpersonal communication in various contexts is analyzed, and communication tools designed to evaluate conflicts, reduce misunderstandings and to improve interaction with others are applied.

COM 130 Introduction to Mass Communication 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This survey course introduces students to the technological evolution of mass media and its impact on audience attitudes, as well as how it influences our society's economic, social, and political climates. Major emphasis is placed on the history, theory, and criticism of the various mediums, including radio, television, film, and Web-based media. The course attempts to create a more 'critical' consumer of mass media.

COM 142 Oral Interpretation of Literature 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This performance-based course provides an introduction to analyzing and vocally/physically communicating thoughts and emotions contained within various literary genres. Emphasis is placed upon the selection and analysis of literature, script preparation, reducing performance anxiety, and developing the vocal and physical delivery skills necessary to achieve the communicative intent of literature in performance.

COM 150 Introduction to Radio Production 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This performance-based course introduces students to the world of radio production. Instruction in the basic fundamentals of radio allows students to experience the hands-on processes involved, including equipment operation and editing software, mixing and editing techniques and the production process. With this knowledge, students create a variety of live and edited projects including promos and a weekly show on WCC's own radio station, Orchard Radio. A brief overview of the history of radio and an understanding of the terminology complete this course.

COM 155 Scriptwriting for Broadcast Arts 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Scriptwriting for Broadcast Arts is designed to give students practical experience in writing styles for the various media of the broadcast industry. Through hands-on exercises and projects, students will become familiar with various writing techniques, develop broadcast writing skills and apply those skills to the creation of news stories, interviews, promos, pitches, liners, public service announcements and commercials. Students will also be exposed to current trends in the industry and given the opportunity to critique those trends and theorize about upcoming styles.

COM 160 Voice and Articulation 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this performance-based course, students are introduced to the verbal and non-verbal elements that are utilized in broadcast announcing. Focus is placed on the verbal basics such as breathing, pitch control and articulation, along with the non-verbal fundamentals of paralanguage and body language. These rudiments are paired together with copy analysis and script marking to give students a full understanding of the process of announcing in the many different fields of broadcasting. Practice in script reads, vocal exercises and self-evaluations give the student ample opportunities to understand and showcase these new techniques.

COM 170 Advanced Radio Production 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; COM 150 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course builds upon previously acquired skills to give students a greater understanding of the radio industry. Advanced work in editing, programming and production will prepare students for the day-to-day workings of a station, along with a greater understanding of ratings, formats and promotions. Students will also host a one-hour radio show on Orchard Radio, enhancing their live production skills. These combined experiences will give students the knowledge necessary to work in a variety of departments within the industry.

COM 183 Persuasion 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will examine and analyze the persuasive techniques used within the different mediums of the mass media. Emphasis will be placed on radio and television and the various segments within those mediums including news, advertising and commercial product placement. This course will expose students to various theories and allow them to identify those theories which are prevalent throughout the mass media and the persuasive effects those theories have on the various audiences.

COM 200 Family Communication 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Family issues are at the forefront of national concerns, particularly in governmental, educational, and religious arenas. In this course, students learn the foundations of family communication through definitions and theories on how families work. Students will learn how families identify themselves through the creation of and practice of personal narrative and the genogram. This course also examines the ways in which family members interact in healthy and unhealthy ways to meet life's challenges and the ways media, government, and religion influence the family.

COM 210 Nonverbal Communication 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will explore and examine various functions and categories of nonverbal communication including, but not limited to, gestures, movement, facial expressions, vocal behavior and appearance. Through interactive exercises, students will learn how to enhance their own nonverbal communication behavior and better interpret others' behavior to become more successful in their personal and professional lives.

COM 225 Intercultural Communication 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students practice effective communication through the use of multiple presentations, small group interactions and critical listening while gaining cross-cultural competencies. During the course, students will become familiar with guiding theories that influence modern intercultural communication and gain practice in applying strategies to build bridges with other cultures.

COM 235 Broadcast Arts Practicum 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; COM 155, COM 160, and COM 170 minimum grade "C"

0 lecture, 0 lab, 0 clinical, 45 other, 45 total contact hours

This course requires students to spend scheduled producing time in the areas of broadcast production, specifically in writing, editing and announcing, to gain experience in the day-to-day duties of radio production professionals. Students will complete an electronic portfolio (demo reel) of their best work as part of an audition package to submit to potential employers and/or internships. The title of this course was previously Practicum: Orchard Radio.

COM 240 Broadcast Arts Internship 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Broadcast Arts program; consent required
15 lecture, 0 lab, 0 clinical, 150 other, 165 total contact hours

Broadcast Art students will work in conjunction with a local broadcasting station to gain experience in the broadcasting industry. Students will be exposed to and work in many areas within a station including, but not limited to, marketing and promotions, production/programming, sales and engineering. Students will acquire working knowledge of the day-to-day operations within the broadcasting station, as well as of industry terminology and practices.

Computer Information Systems CIS

CIS 099 Computer Skills for Beginners 1 credit

Level I Prerequisites: Academic Reading Level 3; Academic Writing Level 2
15 lecture, 15 lab, 0 clinical, 0 other, 30 total contact hours

This class teaches the minimum Computer Literacy skills needed to succeed at WCC. Competencies covered include using Microsoft Windows, basic word processing, Internet skills, file management and email. Students will also be exposed to Blackboard and MyWCC basics. This title of this course was previously Computer Literacy.

CIS 100 Introduction to Computer Productivity Apps 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This class covers the fundamentals of using productivity applications, including word processing, spreadsheet, presentation in both the traditional desktop and in cloud environments. Other topics encompass Web concepts and searching and evaluation of web sites. Students enrolling in this course are expected to be familiar with using a web browser, sending email, and basic file management skills. Students with no prior experience with computers are advised to take CIS 099. The title of this course was previously Introduction to Computers and Software Applications.

CIS 110 Introduction to Computer Information Systems 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1
Level II Prerequisites: A working knowledge of spreadsheet and word processing software or CIS 100
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to the principles of information systems for business majors. Students receive an overview of information systems including a review of computer concepts, how technology is used in business, the information systems discipline, and the systems development life cycle. Students need a working knowledge of spreadsheets and word processing software to be successful in the course.

CIS 121 Linux/UNIX I: Fundamentals 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: Completion of a CIS (above CIS 100), CPS, or CSS course
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course introduces UNIX and Linux tools to the experienced computer user and to those with only a basic knowledge of computers. The course covers the UNIX/Linux file system, communication with other users, editors, file manipulation and processing, basics of pipes and redirection, simple shell programming, introduction to the X Windows system, and a basic introduction to Linux. This course is designed to help students prepare for the LPI Linux Essentials Certificate.

CIS 161 Introduction to PowerShell 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
Level II Prerequisites: CNT 211 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to Windows PowerShell. Students develop basic scripts and learn commands for managing the Windows environment.

CIS 174 CIS Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Two courses in CIS discipline, minimum grade "C"; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

This course recognizes the value of learning which takes place on the job by offering college credit for development and achievement of learning objectives which are accomplished through current work experiences. Students also participate in monthly work related activities, such as meetings or seminars.

CIS 206 Linux/UNIX II: Basic System Administration, Networking, and Security 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: CIS 121
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this second of four courses on the Linux operating system, Linux System administration tasks are discussed and practiced. This course is designed to help prepare students for Linux Certification Exams. Students should be familiar with common Linux distributions and should be comfortable with basic installation and configuration to succeed in this course.

CIS 208 Linux/UNIX III: Intermediate System Administration, Networking, and Security 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: CIS 206 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this third of four courses on the Linux operating system, Linux networking theory is discussed and practical application of the theory is shown through lab exercises. Students should be familiar with common Linux distributions and comfortable with system administration activities to succeed in this course. This course is designed to help students prepare for Linux Certification Exams.

CIS 221 Linux/UNIX Programming and Scripting I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: CIS 121 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students learn to use UNIX more efficiently with advanced forms of the commands and utilities building on the fundamentals of Linux/UNIX, as well as new commands and constructs. Advanced topics include sed, grep, awk, perl, and how to effectively use regular expressions, as well as constructs and special commands used in writing shell scripts. New topics covered include functions, traps, arithmetic on variables and input/output techniques.

CIS 274 CIS Co-op Education II 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CIS 174 minimum grade "C"; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, computer-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses.

CIS 282 Database Principles and Application 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 120, CPS 161 or CPS 171, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to contemporary database theory and practice. Topics covered include terminology, database structures, SQL (structured query language), and NOSQL concepts and application. This course is intended for anyone possessing a basic knowledge of programming who is interested in database theory and practice. The previous titles of this course are Small Systems Database and Relational Database Concepts and Application.

CIS 285 Applied Data Analytics 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BMG 265, BMG 275, and CIS 282, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will be introduced to the fundamental concepts of "Big Data" management and data science analytics, learning to recognize the challenges faced in dealing with massive volumes of available data as well as in proposing scalable solutions for them. This course is highly interactive, using case studies that span multiple vertical industries to process and analyze data related to common business issues.

Computer Networking Technology CNT

CNT 100 Introduction to Windows Networking 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the fundamental concepts of Windows networking as required for the Microsoft Technical Associate Certification. Four knowledge domains comprise this course: Networking Fundamentals, Security Fundamentals, Operating System Fundamentals, and Windows Server Fundamentals.

CNT 201 Administering Microsoft Windows Client Operating Systems 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CST 225 or CNT 206, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are provided with a strong foundation in installing, configuring and administering Windows client operating systems. Topics covered include configuring file systems, security, networking protocols and network printing. Performance tuning and troubleshooting will be taught, with an emphasis on the boot process and application support. A basic understanding of Windows operating systems and networking principles is required. The title of this course was previously Administering Microsoft Windows XP Professional.

CNT 206 Introduction to Networks 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students have the opportunity to take a portion of the CISCO Certified Network Associate (CCNA) certification examination. Students learn the fundamentals of the Open Systems Interconnect (OSI) model and the basics of computer networking including contemporary network services, transmission media, and protocols. The most common implementations in today's Local Area Networks (LANs) and Wide Area Networks (WANs) are used. This course was previously CNT 200 and the title was previously Internetworking I-Fundamentals.

CNT 211 Installing and Configuring Windows Server 2012 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1; CNT 201 minimum grade "C", may enroll concurrently
Level II Prerequisites: CST 225 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is part of a series of courses that provides skills and knowledge necessary to implement the core infrastructure services in a Windows Server 2012 environment and to lay a foundation in the preparation for the Windows Server 2012 MCSA certification. This course covers the installation and initial configuration of Windows Server 2012 including server virtualization, an introduction to various server roles, including active directory services with group policies, the DNS and DHCP roles, storage services such as RAID and Storage Spaces, the file and print services role, and thorough coverage of IPv4 and IPv6 addressing. The title of this course was previously Administering and Managing Microsoft Windows Server Active Directory.

CNT 216 Routing and Switching Essentials 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CNT 206 minimum grade "C-"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students prepare for a portion of the CISCO Certified Network Associate (CCNA) examination. Students gain the knowledge and skills to install, configure, update and troubleshoot networks, including VLANs and basic security. This course was previously CNT 225. The title of this course was previously Internetworking II - Routers.

CNT 223 Administering Windows Server 2012 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1; CNT 211 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is part of a series of courses that provides skills and knowledge necessary to manage and maintain the core infrastructure required for a Windows Server 2012 environment and to lay a foundation in the preparation for the Windows Server 2012 MCSA certification. This course covers advanced active directory group policy concepts, user and computer administration, A.D. database snapshots and recycle bin. Advanced DNS concepts are also covered as well as remote access VPN's, direct access, and NPS (Radius) servers. Advanced file system concepts such as FSRM file screens, access enumeration, DFS, disk quotas, encryption and object auditing as well as deploying/maintaining server images, WSUS updates, and server monitoring complete the course. The title of this course was previously Windows Server Networking Infrastructure Configuration.

CNT 224 Configuring Advanced Windows Server 2012 Services 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CNT 223 minimum grade "C", may enroll concurrently
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is part of a series of courses that provides skills and knowledge necessary to manage and maintain the core infrastructure required for a Windows Server 2012 environment and to lay a foundation in the preparation for the Windows Server 2012 MCSA certification. This course covers advanced DHCP and DNS service settings, advanced files services - BranchCache, Dynamic Access Control, Network Load Balancing, and Failover Clustering. Also covered is disaster recovery implementation using the server backup tool for file backup as well as complete OS restoration. Advanced active directory concepts including DS Replication with child domains, sites, and forest trusts will also be covered. Certificate servers will also be implemented as well as covering rights management and federation services. Terminal services and web service will complete the course. The title of this course was previously Microsoft Server Administrator.

CNT 226 Scaling Networks 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CNT 216 minimum grade "C-" or equivalent
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students learn how to configure and troubleshoot routers and switches and resolve common issues with Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP), Spanning Tree Protocol (STP), and VLAN Trunking Protocol (VTP) in both IPv4 and IPv6 networks. Students will also develop the knowledge and skills needed to implement DHCP and DNS operations in a network. This course is part of the CISCO networking curriculum at WCC and helps students prepare for a portion of the CISCO Certified Network Associate (CCNA) certification examination. This course was previously CNT 235.

CNT 236 Internetworking IV - WANs 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CNT 226 minimum grade "C-", may enroll concurrently
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is part of the CISCO networking curriculum at the College. It helps students prepare for a portion of the CISCO Certified Network Associate (CCNA) Certification Examination. The course focuses on advanced IP addressing techniques such as Network Address Translation (NAT), Port Address Translation (PAT), DHCP, and WAN technology and terminology, including PPP, ISDN, DDR, Frame Relay, network management, and introduction to optical networking. In addition, the student will prepare for taking the CCNA Exam. This course was previously CNT 245.

CNT 237 Health Information Networking 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CNT 236 minimum grade "C"

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

The Cisco Health Information Networking course is a technology-focused curriculum primarily designed for Cisco Networking Academy students. Students will be introduced to Electronic Health Care Records regulations and terminology. Students will be expected to use their Cisco CCNA training to design and implement networks in health care settings. Students with industry experience using Cisco technologies may contact the instructor for permission to waive the prerequisite.

CNT 251 Designing Windows Server Security 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CNT 211, CNT 223 or CNT 224, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course students will learn and use the various tools and features provided by Windows Server necessary to secure Windows Server Local and Network resources. Emphasis is placed on security features and components not covered in the other Windows Server classes such as Bitlocker, IPSec, Security Templates, WSUS, SMTP and POP3 security, Certificate Server, Kerberos and NTLM Authentication, and covers in detail, most features of Forefront Threat Gateway Server, Microsoft's Software Firewall. Students with equivalent experience may contact the instructor for permission to waive the prerequisite.

CNT 290 Network Forensics 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CNT 224 or CNT 236, minimum grade "C" or equivalent experience
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will be introduced to various tools and concepts associated with network forensics to include monitoring, detection, analysis and mitigation. Network topologies include enterprise, LAN, WAN, VoIP and wireless configurations. Hands-on configuration, monitoring and troubleshooting of various network services and after-event analysis of network intrusions is performed. The title of this course was previously Network Troubleshooting and Forensics.

Computer Science CPS

CPS 112 Game Development for Beginners 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course introduces the basics of 2D game design and development. Students will identify game resource requirements and then use supplied game resources to make a complete 2D game. Students will develop game algorithms using object instances, sprites, events, action blocks, library functions, levels, sound effects, music, rooms and scores. Students will develop games without using programming language, but they are expected to have experience with computer application software.

CPS 120 Introduction to Computer Science 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: CIS 100 or CIS 110, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to computer science for those planning to take advanced courses in the computer programming field or for those who do not want to take programming courses but a computer course is required. Students learn to write, enter, compile and execute simple computer programs. This course is intended to bridge the gap between a basic computer literacy and advanced courses. Topics include numbering systems, operating systems, database, programming, networking, Internet and algorithms. Students must have basic computer literacy in order to be successful in this course. Students with computer experience equivalent to CIS 100 or CIS 110 may contact the instructor for permission to waive the prerequisite.

CPS 161 An Introduction to Programming with Java 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the Java programming language. Looping, conditional logic and string manipulation are some of the basic programming concepts covered. Object-oriented concepts are covered such as constructors, polymorphism, abstract classes, interfaces and exceptions. Graphical user interface (GUI) topics are minimally covered. CPS 261 will cover these topics in depth. Prior programming experience is recommended. Students who have no programming experience should consider taking CPS 120. This course was previously CIS 175.

CPS 171 Introduction to Programming with C++ 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4
Level II Prerequisites: CIS 100, CIS 110, or CPS 120, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This is an introduction to programming using the C++ language. Students learn about problem solving strategies, top-down program development and programming style. Topics include sequential, decision and iterative control structures, functions, basic data structures and an introduction to classes. Students write and execute approximately eight C++ programs. Students should have basic experience using a computer but no prior programming is required. Students with computer experience equivalent to CIS 100 or CIS 110 or CPS 120 may contact the instructor for permission to waive the CIS prerequisite.

CPS 192 Introduction to C#.Net 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the C# programming language. Students will be introduced to looping, conditional logic, methods, arrays, structures, enumerations, classes and object-oriented concepts.

CPS 251 Android Programming Using Java 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 161, minimum grade "A-" or CPS 261, minimum grade "B-"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students create programs written in Java to run on an Android smart phone or tablet. Students taking this class should have a very good knowledge of Java. Topics include Graphical User Interfaces, data storage, audio, databases, GPS and Google Maps.

CPS 255 IOS/Apple Programming Fundamentals 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4; CPS 161 or CPS 171, minimum grade "B-" or equivalent programming experience
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will learn the fundamentals of Apple's programming language Swift. Fundamental Swift language concepts are covered, including optionals, classes, structs, closures, etc. GUI concepts are also covered, which include using AutoLayout, outlets and actions to create simple applications that run on an iPhone. The title of this course was previously IOS/Objective C-Apple Ipad/Iphone.

CPS 256 Advanced IOS/Apple Programming 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 255 minimum grade "B-"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this courses students will learn advanced programming concepts to develop IOS applications. Advanced applications will be built on IOS/Apple devices.

CPS 261 Advanced Java Concepts 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 161 minimum grade "B-"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is a continuation of the Java concepts covered in CPS 161. Topics covered include input/output, graphical user interfaces associated with AWT/Swing, data structures, networking, and multitasking (Threads). Students entering this class should have a good understanding of object-oriented programming concepts such as inheritance and polymorphism. The title of this course was previously Programming in Data Structures in Java.

CPS 271 Object Features of C++ 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 171 minimum grade "C+"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course continues the study of C++ begun in the prerequisite course. Students learn the object-oriented features of the language. Topics include classes, constructors and destructors, operator overloading, pointers, dynamic allocation of memory, inheritance, polymorphism, file manipulation, templates, and exceptions. Prerequisites will be checked on the first day of class.

CPS 272 Data Structures with C++ 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 271 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course continues the C++ sequence. It covers more advanced computer science features as implemented in C++. Topics include advanced data structures, complexity/efficiency of algorithms, recursion and problem-solving.

CPS 276 Web Programming Using Apache, MySQL, and PHP 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 161 or CPS 171, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

Students will build dynamic database-driven Web applications using PHP and MySQL. Students who have not taken CPS 161 or CPS 171, but have equivalent programming experience in any language, should request an override from the instructor or department chair. HTML knowledge is helpful.

CPS 278 Java Server Programming 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 161 minimum grade "B-"

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will learn about Java Servlets, Java Server Pages (JSP), JSTL, Expression Language, Tag Libraries and Java Database Connectivity (JDBC). Students taking this class should have a good knowledge of Java Fundamentals. Some knowledge of simple HTML and SQL is helpful but not mandatory. This course was previously CIS 278.

CPS 292 Intermediate and Advanced C#.Net 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4; CPS 192 or CIS 282, minimum grade "B-"

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will learn more advanced skills in C#. Class projects will include many advanced features of Microsoft Visual Studio. There will be a special focus on making full use of the C# language using XML, database, web services and other technologies. Additional focus will be on creating reusable code, and using object-oriented techniques such as encapsulation, inheritance, interfaces, delegates, and polymorphism.

CPS 296 Connected Device Projects with C#.Net 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4; CPS 292 and CIS 282, minimum grade "B-"
Level II Prerequisites: CPS 120
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This project-based course is the capstone in C#.Net training. Fundamentals of the vehicle CAN (Controller Area Network) will be covered, and students will be challenged to use C#.Net to create applications for small connected and embedded computing systems, connected vehicles, intelligent transportation systems and ubiquitous computing environments. Prior knowledge of HTML, networking fundamentals, client-server architecture and basic electronics is recommended.

CPS 298 Professional Team Programming 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 251, CPS 256, CPS 261 or CPS 278, minimum grade "B-"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

The goal of this course is to simulate industrial experience of working in teams. Students will work in teams using version control software (GIT, GitHub) to manage their projects. The course explores the advantages and disadvantages of leading programming approaches like Agile Programming, Waterfall approach, Top down programming and Paired developers. Students will learn and apply built-in testing tools and other industry practices.

Computer Systems Security CSS

CSS 200 Introduction to Network Security - Security+ 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1
Level II Prerequisites: CIS 121 and CNT 201, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students learn the fundamentals of network security. Topics to be covered include understanding security measures, techniques for securing systems, legal issues, basic intrusion detection and recovery methods. Many of the topics required for the Security+ certification will be covered. This course helps students prepare for the CompTIA Security+ Certification. The student is expected to have a basic knowledge of Linux, Windows, working at the command line of any Operating System and networking. The title of this course was previously Computer Security II.

CSS 201 Introduction to Cryptography 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3 or MTH 160; CSS 200 and CIS 161, minimum grade "C"; CSS 200 may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the terminology, concepts, and application of cryptography in digital communications. Topics such as algorithms, encryption protocols, message integrity and authentication using hash functions will be discussed.

CSS 205 Essentials of Network Penetration Testing 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1; CSS 200 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the techniques of network penetration testing using open source tools. Through various hands-on exercises, the student will be introduced to the concepts, techniques, tools and methodologies for evaluating and auditing network vulnerabilities and properly securing networks from attack. Students are expected to have knowledge of Linux, Windows, working at the command line of any Operating System and networking. The title of this course was previously Computer Security III.

CSS 210 Network Perimeter Protection - CCNA Security 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1
Level II Prerequisites: CNT 206 and CNT 216, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students learn how to implement security solutions that reduce the vulnerability of computer networks. Topics include principles of network security, packet filtering with ACLs, network, configuring and deploying multiple firewall topologies using Cisco devices, implementing virtual private networks (VPNs) and user authentication. This course uses the Cisco Networking Academy curriculum to help students prepare for the CCNA Security certification examination. The titles of this course were previously Computer Security IV and Basic Network Perimeter Protection.

Computer Systems Technology CST

CST 118 Microsoft Command Line Fundamentals 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: CIS 100 minimum grade "C" or equivalent
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students use the command line, utilizing the MS-DOS operating system as the instructional tool. Relevant commands used regularly by network administrators are emphasized. Activities include learning command syntax, parameters, redirection, error messages and file/directory structures. Networking activities include mapping drives, capturing printers, network backups, preparation of removable boot devices, batch file creation and an intro Powershell Scripting. This course was previously ELE 118.

CST 160 Computer Technology I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
Level II Prerequisites: CIS 100 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

Through hands-on experiences, this course prepares students to install, configure, upgrade, and troubleshoot personal computers. Students learn the fundamentals of PC hardware including the motherboard, power supply, CPU, memory, storage devices, add-on cards, BIOS/UEFI, and CMOS. In addition, students learn the fundamentals of the Windows operating system including operating system functions, structure, major system files, and the basic boot sequence. This course contains content previously taught in CST 150.

CST 165 Computer Technology II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CST 160 minimum grade "C", may enroll concurrently
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

Through hands-on experiences, this course builds on the student's knowledge of personal computer installation, configuration, upgrading, and troubleshooting, with an emphasis on servers in the data center. Students learn both fundamental and advanced techniques in working with the Windows operating system. Students apply their understanding of the operating system's functions and structure, and employ common diagnostic utilities and tools, to identify steps to correct system problems. This course contains content previously taught in CST 155.

CST 174 CST Co-op I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience.

CST 225 PC Networking 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: CIS 100 minimum grade "C"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

Students learn basic concepts associated with using PC's in a networked environment, including connecting to a network and connecting networks together. Included are peer-to-peer and client/server networks, network topologies and architectures, the OSI model, Ethernet and TCP/IP protocols, IPv4/IPv6 and MAC addressing, routers and routing, network printing, NAT and VPN's, plus wireless networking. The course also provides a strong foundation in preparation for the CompTIA Network+ Exam. This course contains material previously taught in ELE 216A and ELE 225A.

CST 270 Computer Forensics I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CST 160 minimum grade "C+"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will cover the identification, handling, recovery, analysis and reporting of data on digital storage devices. Students will be introduced to the type and location of data of evidentiary value, from identification of binary structure to directory location. Topics include analysis of volume and file system, evidence data including, recovery of password protected and deleted data, Internet artifacts, thumb files, shadow files, and basic registry analysis. Hands-on exercises guide discussions and reinforce the subject matter. Two primary forensic tools are introduced and utilized in this course: Forensic Tool Kit Suite (FTK) Imager, and FTK. Other tools include freeware programs that are widely used for forensic purposes. Legal considerations of this profession are also covered. This course contains material previously taught in CSS 270. The title of this course was previously Data Recovery and Analysis.

CST 275 Computer Forensics II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CST 270 minimum grade "C+" and CNT 201 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students learn new skills to apply to real and lab-produced hypothetical cases. Hands-on exercises guide discussions and reinforce the subject matter. Students will learn advanced techniques used to obtain and analyze digital information for use as evidence in civil or criminal cases. Topics may include analysis of volume and file system or of specific evidence data including registry and Internet artifacts, deleted data, thumb files, shadow files and reparse points. Students will enhance their understanding of the Forensics Tool Kit Suite. This course helps prepare students to sit for the AccessData ACE certification test. This course contains material previously taught in CSS 275. The title of this course was previously Data Recovery and Forensics.

CST 278 Computer Forensics for Mobile Devices 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CST 270 minimum grade "C+"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn to acquire a forensic image of digital mobile devices, and then analyze the data. The types of forensic recovery including file system, logical, and physical will be covered. Mobile operating systems covered in this course include iOS and Android. Topics include evidence handling, analysis of iOS file systems and structures, file-type formats, 7-bit schema, NAND structure and other related topics. Students will then apply their knowledge to solve real and lab-produced case examples.

Construction Management CMG

CMG 110 OSHA 10 Hour for the Construction Trades .5 credit

Level I Prerequisites: Academic Reading Level 3; Academic Writing Level 3
7.5 lecture, 4.5 lab, 0 clinical, 0 other, 12 total contact hours

Students will be trained on the requirements established by the federal Occupational Safety and Health Administration for the OSHA 10-hour Safety Certification.

CMG 125 Introduction to Engineering Design Technology 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 30 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students are introduced to various production and engineering drawings as well as modeling used in advanced technology fields such as automotive, manufacturing, prototyping and construction technology. Students will identify plan symbols and graphics and be introduced to several methods used in automated design software.

CMG 130 Construction Site Safety and OSHA Regulations 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers the application of safe work practices required by Michigan Occupational Safety and Health Act (MIOSHA) and the Federal Occupational Safety and Health Administration (OSHA) as they apply to construction site safety. Topics include: personal protective equipment; hand, portable and stationary power tools and equipment; construction site safety; MIOSHA and OSHA standards; HAZMAT; and an investigation into the philosophical, social, economic, and technological basis for safety. Students that complete the course can receive an OSHA-30 Hour card. This course is part of the 60 contact hours required for the State of Michigan Builders license. The title of this course was previously Construction Site Safety and MIOSHA Regulations.

CMG 145 Construction Plan Reading for the Trade 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, the pre-apprentice is provided with training in the elements of various types of construction drawings such as steel frame construction, architectural, engineering and specialty drawings used by the construction trade.

CMG 150 Introduction to Construction Management 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This course covers an introduction to developing, planning, and scheduling construction projects. Additional topics include: site development, material usage, specifications, estimating and managing cost control.

CMG 170 Construction Graphics 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CMG 150 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers basic print reading skills for residential and light commercial/industrial projects. It includes symbols and conventions, terminology, print organization, and basic material take-off techniques. It will include refinement of basic sketching and drawing skills.

CMG 180 Application of Construction Materials 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CMG 150 minimum grade "C"
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

The purpose of this course is to give students an overview of the basic properties and use of construction materials. Students will be required to attend lecture and lab to analyze basic materials that include: soils, concrete, masonry, steel, wood, plastic, finishes, and thermal.

CMG 200 Construction Systems 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CMG 170 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers structural systems, associated non-structural components, and consideration appropriate to mechanical, electrical, plumbing, and support equipment.

Construction Technology CON

CON 104 Construction Framing I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CON 108 minimum grade "C"
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

This course covers light frame construction for homes and light industrial buildings. Construction theory in class is included to support lab activities on and offsite. Students will discuss layout techniques, materials required, and proper safety for deck and platform structures, demolition of existing systems, foundation systems and rough stair systems. The title of this course was previously Residential Construction I.

CON 105 Construction Framing II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CON 104 and CON 108, minimum grade "C"; CON 104 may enroll concurrently
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

This course covers light frame construction for homes and light industrial buildings to include wall framing, roof framing, and installation of doors and windows. Construction theory in class is included to support lab activities on and offsite. Students will discuss layout techniques, materials required and proper safety regulations for building these structural systems. The title of this course was previously Residential Construction II.

CON 106 Contextualized Math for the Trades 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; Admission to Ironworker Pre-Apprenticeship program
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will learn basic construction measurement, construction math formulas, review basic fraction problem-solving for construction and conversions required in the construction trades.

CON 108 Introduction to Construction Technology 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This is an introductory course for those students that have little or no prior construction training. Students will be introduced to construction terminology, materials, tool usage and methods of measurement. Students will become familiar with construction safety requirements and proper handling of materials, tools and equipment used at all levels of construction projects. Students with acceptable experience or training should contact instructor for override into next course in sequence.

CON 130 Commercial Property Maintenance I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will be introduced to safety, sexual harassment and fair housing regulations set forth by the state and federal government. Students will learn customer service and time management as they relate to employment in the repair and maintenance of commercial properties (including: hospitals, hotels, malls, residential rental property, both single and multifamily, resorts, and office buildings). Students will understand the basic components of plumbing in a commercial property and apply proper techniques to correcting malfunctions and/or installation of new products. Students will learn the basic components of doors, locks and closers and apply proper techniques to correcting malfunctions and/or installation of new products. This course was previously TRI 131.

CON 133 Commercial Property Maintenance II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CON 130 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will be introduced to basic electricity. Students must comprehend and apply proper safety guidelines for the fundamentals of electricity and how those apply to series circuits, parallel circuits and electrical devices. Comprehension and application of advanced plumbing techniques will be addressed including sinks, faucets, drains, water heaters and boilers. Students will understand flooring at each level including, sub-flooring and floor covering. This course was previously TRI 133.

CON 135 Commercial Property Maintenance III 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CON 133 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will be introduced to HVAC terminology. Students will recognize heating and refrigeration systems and components. Comprehension of major appliance components and installation processes applying proper industry standards. Students will also understand wall covering by applying proper industry, safety and ventilation standards. This course was previously TRI 135.

CON 137 Commercial Property Maintenance IV 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CON 135 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will comprehend advanced HVAC terminology for troubleshooting system and electrical issues. Students will recognize the different types of exterior finishes and understand repairs of those finishes following proper industry and safety standards. Students will examine chemical and cleaning systems for pools. Students will identify pool maintenance issues and understand how to repair said issues. This course was previously TRI 137.

CON 170 Cabinetry and Millwork I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CON 108 minimum grade "C", may enroll concurrently
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

Students will apply basic tool set up and operation for all hand and stationary tools necessary to complete fabrication and veneer application. There will be a focus on proper use and assembly of the materials. These techniques will be used for identifying and preparing rough and manufactured lumber for further working into panels, lathe and molding blanks, doors, drawers and miscellaneous components. Each student will build a cabinet from rough lumber, incorporating a fitted drawer and a frame and panel door using a raised panel, hung on mortised butt hinges. The title of this course was previously Introduction to Cabinetry and Millwork.

CON 173 Cabinetry and Millwork II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CON 170 minimum grade "C"
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will apply tool set up and operation for advanced hand and stationary tools. These techniques will be used for identifying and preparing rough lumber, manufactured lumber, and plastics for working into complex assemblies. There will be a focus on using the vacuum press and other techniques to fabricate curved and freeform components. Each student will produce at least one piece of furniture or millwork of appropriate complexity; this project is chosen by the student consultation with the instructor. This course was previously TRI 171. The title of this course was previously Cabinet Making Principles and Concepts.

CON 174 CON Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated position in the field of construction. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience.

CON 175 Cabinetry and Millwork III 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CON 173 minimum grade "C"
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

The students will build upon the skills learned in prerequisite courses with a goal of creating and manufacturing an entire piece of furniture from rough lumber, manufactured lumber, and plastic. The focus will be to complete the construction of a piece of furniture of appropriate complexity. Students will further their mastery of hand and machine tool maintenance. This course was previously TRI 271. The title of this course was previously Cabinet Making Fabrication.

CON 180 Introduction to Green Building 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to aspects of green and sustainable building practices. Beginning with an overview of the environment and the history of the green construction movement, students will learn sustainable construction theories and how they differ from standard construction practices. Topics include LEED certification, building systems, materials, site selection, air quality and remodeling.

CON 193 Tools, Equipment and Material Handling for the Trade 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Corequisites: CON 106
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course for pre-apprenticeship ironworkers, students will focus on the tools and equipment used on construction sites for steel structures, curtain walls reinforcing and material handling.

CON 204 Construction Finishes - Interior 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CON 105 minimum grade "C", may enroll concurrently
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

This course covers the installation of interior finishes for homes and light industrial buildings to include insulation, drywall applications, flooring, and interior trim. Construction theory in class is included to support lab activities on and offsite. Students will discuss layout techniques, materials required and proper safety regulations for finishing interiors per industry standards. This course was previously Residential Construction III.

CON 205 Construction Finishes - Exterior 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CON 105 minimum grade "C", may enroll concurrently
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

This course covers exterior finishes for homes and light industrial buildings to include siding, roofing, and waterproofing systems. Construction theory in class is included to support lab activities on and offsite. Students will discuss layout techniques, materials required, and proper safety regulations for finishing exteriors per industry standards. This course was previously Residential Construction IV.

CON 220 Construction Licensing, Contracts, and Start Up 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CON 205 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will prepare for and practice a) taking the State of Michigan Builders License Exam, b) writing legal construction contracts for projects and c) producing a business plan for starting a residential construction business. This course is approved by the State of Michigan as part of the pre-licensure education requirements. The title of this course was previously Residential Construction Licensing, Contracts, and Start Up.

CON 230 Construction Production 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CON 205 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the production aspect of light frame construction. Students will be using house plans to estimate materials, schedule trades, and prepare quality control "punch lists" based upon materials and trades used. Topics include construction materials, estimating, scheduling and quality control. The title of this course was previously Residential Construction Production.

CON 235 Construction - Building Codes and Prints 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers light frame construction building codes, print reading and reproduction. Students will discuss the State of Michigan Residential Building codes, plan development, and design. This course is part of the sixty contact hours required for the State of Michigan builders license.

CON 240 Construction - Advanced Finishes and Techniques 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CON 205 minimum grade "C"
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students will learn proper installation techniques for interior trim systems including stairs, handrails, crown molding, cabinetry detailing, and built-up trim details. The title of this course was previously Advanced Trim and Interior Finish Techniques.

CON 247 Sustainable Building Practices 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CON 180 minimum grade "C", may enroll concurrently
30 lecture, 75 lab, 0 clinical, 0 other, 105 total contact hours

Students will relate green building theory and practice, learned in previous courses, to the processes of weatherizing and creating energy-efficient structures. With an emphasis on minimizing heat and energy loss and water usage, students will apply these processes on the construction site.

CON 250 Cabinet Shop Management and Fundamentals 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CON 175 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn about job cost tracking, mechanical detailing, and plan execution.

CON 255 Construction Concrete and Masonry 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CON 104 minimum grade "C"
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

This course covers concrete and masonry finishes for homes and light industrial buildings to include foundations, slabs, brick, block and stone. Construction theory in class is included to support lab activities on and offsite. Students will discuss layout techniques, materials required, and proper safety regulations for completing concrete and masonry projects per industry standards. This course was previously Residential Construction Concrete and Exterior Finishes.

CON 260 Construction Remodeling 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CON 205 minimum grade "C"
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students will learn about light frame construction layouts and details needed for remodeling projects. Topics include existing structure layout, demolition, rebuilding, and finishing techniques. The title of this course was previously Residential Construction Remodeling.

CON 270 Construction Mechanicals 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course covers the mechanical features installed in homes and light industrial buildings. Construction theory in class is included to support lab activities on and offsite. Students will discuss terminology, material recognition, and state requirements for identifying and troubleshooting home and light industrial utility and mechanical systems.

CON 274 CON Co-op Education II 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CON 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses.

CON 275 Cabinetry and Millwork IV 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CON 175 minimum grade "C"
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

Using various finishing materials (oil-based, shellac, lacquer, modern resin, catalyzed and multi-part systems) students will learn how to prepare cabinetry and millwork materials for finishing. The course will include detailed explanations of wiped, rolled, brush and spray applications of cabinet and furniture finishes. Students will learn finishing techniques using proper industry set up and safety standards. The title of this course was previously Finishing Concepts and Processes.

Criminal Justice CJT

CJT 100 Introduction to Criminal Justice 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students examine the criminal justice system as a method of social control in the United States. They will examine crime definitions and crime counting, as well as the history, function and responsibility of each of the components of the criminal justice system in responding to crime.

CJT 110 Emergency Telecommunication 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
80 lecture, 0 lab, 0 clinical, 0 other, 80 total contact hours

The goal of this course is to provide participants with basic skills in public safety communication. Communication skills, telephone and dispatch techniques, legal issues and CPR skills are some of the topics covered in the course.

CJT 111 Police/Community Relations 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will study the role of the individual officer and the department in achieving and maintaining public support. Topics include customs, culture, and problems of ethnic and minority groups. Public information services and techniques for the alleviation of community tensions are also covered.

CJT 120 Criminal Justice Ethics 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is a normative ethics course that examines values and issues relevant to success in the criminal justice area. The course includes personal values clarification, historical ethics and applied ethics. The student will be exposed to ethical issues that a practitioner in law enforcement, the courts or corrections may encounter in their careers. Students will learn the information and skills necessary to address these issues.

CJT 130 Introduction to Paralegal Studies 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students receive an overview of the nature of paralegal careers, with a look at the roles, opportunities, responsibilities and problems encountered. The student is introduced to areas of the law in which the paralegal/legal assistant may work. Ethical considerations are addressed and legal terminology will be introduced and emphasized. This course was previously BOS 211.

CJT 154 Everyday Law I: Law and Civil Liberties 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to our legislative process and the United States legal system. Beginning with a brief overview of constitutional foundations, students will explore lawmaking and the institutions and process used to enforce laws. Topics covered will include individual rights and liberties and the everyday application of law.

CJT 155 Everyday Law II: Civil Law, Liabilities and You 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to the principles of the civil law which would be the most likely to have an impact on their daily lives, such as tort law, contract law, family law and consumer law.

CJT 160 Criminal Justice Constitutional Law 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a comprehensive examination of key provisions of the US Constitution, with emphasis on those areas affecting the rights and privileges of individual citizens
(e.g. those imparting procedural law). A historical approach is adopted to give students a complete understanding of the mutable nature of the Constitution and those factors which impact it. This course was previously CJT 112.

CJT 170 Domestic and International Terrorism 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CJT 100
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an in-depth study of international terrorism and domestic terrorism, with a focus on how the Federal and State governments respond to and investigate terrorism. The roots of terrorism, types, causes, strategies, targets and weapons will be covered. The course will include an overview of how other crimes are used by terrorists for funding and the impact of media coverage. Students will engage in practical exercises such as mock response to threats of terrorism.

CJT 208 Criminal Evidence and Procedure 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an examination of the criminal justice judicial process, including the roles of defense attorneys, prosecutors and judges. It emphasizes the rules and laws governing the admissibility of evidence, as well as the law governing criminal procedure.

CJT 209 Criminal Law 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course students will examine the history and philosophy of the development of the criminal law system in the United States. Students will exam in depth the elements of traditional crimes, based upon the common law and the Model Penal code. Topics include the theoretical challenges and defenses to criminal liability.

CJT 223 Juvenile Justice 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The course is an in-depth examination of the juvenile justice system, including law enforcement, courts and corrections. It emphasizes the history and philosophy of a separate justice system. This course also surveys the theories of causation of juvenile delinquency, juvenile victimization, and intervention strategies.

CJT 224 Criminal Investigation 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will be introduced to the science of criminal investigation. They will become familiar with the methodology of crime scene investigations, evidence collection, preservation, and analysis. Included are the rudiments of follow-up investigations, interviews, interrogations and report writing. Techniques applicable to investigation of specific crimes will be highlighted.

CJT 225 Seminar in Criminal Justice 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides a unifying experience and evaluation of criminal justice systems, policies and practices. Preparation of a concluding research paper is required for this course. The focus is on analytical thought processes and problem-solving.

CJT 229A Law Enforcement Training Part I 12 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; minimum 45 credits with 2.0 GPA and pass MCOLES tests; consent required
330 lecture, 333 lab, 0 clinical, 0 other, 663 total contact hours

This is part of an approved Police Academy course for the State of Michigan. Students are introduced to the skills and abilities required to become a law enforcement officer. The Michigan Commission on Law Enforcement Standards (MCOLES) Policy and Procedure Manual, WCC Police Academy Daily Rules and Regulations, and the WCC Student Handbook will govern student conduct. The Police Academy is structured as an adult learning experience and will require significant self-discipline on the part of the student. Students will be held to this same code of ethics as sworn law enforcement officers. Students must complete both CJT 229A and CJT 229B to be eligible to sit for the MCOLES exam. This course contains material previously taught in CJT 221A.

CJT 229B Law Enforcement Training Part II 7 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; minimum 45 credits with 2.0 GPA, pass MCOLES tests and CJT 229A; consent required
110 lecture, 110 lab, 0 clinical, 0 other, 220 total contact hours

This is the conclusion of an approved Police Academy course for the State of Michigan. Students develop the skills and abilities required to become a law enforcement officer. The Michigan Commission on Law Enforcement Standards (MCOLES) Policy and Procedure Manual, WCC Police Academy Daily Rules and Regulations, and the WCC Student Handbook will govern student conduct. The Police Academy is structured as an adult learning experience and will require significant self-discipline on the part of the student. Students will be held to this same code of ethics as sworn law enforcement officers. Students must complete both CJT 229A and CJT 229B to be eligible to sit for the MCOLES exam. This course contains material previously taught in CJT 221B.

Culinary Arts CUL

CUL 100 Introduction to Food Service and Hospitality Industry 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students will be introduced to the hospitality industry including high quality customer service, servant leadership and sustainability. Students will trace the industry's history from founding culinarians and innovators through today's top industry leaders. Resources about professional pathways and organizations in the hospitality industry will be explored. This class includes off-campus tours, case studies, trend identification and a career opportunity focus. The title of this course was previously Introduction to Culinary Arts Industry.

CUL 103 Farm Harvesting and Management 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Reading and Writing Level 6; Level 1 Math
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

In this entry-level, hands-on course, students will explore a wide range of topics including composting, soil management, how to prepare beds, choosing the proper tools, how to amend the soil, garden planning, and the growing process from seed starting to harvesting. The course lab will give students an opportunity to use their knowledge about organic growing in a practical setting.

CUL 104 Baking Science 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this entry-level course, students are introduced to the basics of baking science and prepared for lab courses. Emphasis is placed on how key ingredients function and interact in the baking process. Students will recognize how changes in ingredients and/or processes affect baked products.

CUL 110 Sanitation and Hygiene 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students learn the importance of sanitation to the hospitality worker: layman's bacteriology, communicable diseases, food poisoning, pest control, cleaning, sanitizing, and personal hygiene. Students must pass the ServSafe Manager Food Handler National Exam in order to earn a grade of "C" or higher in this course.

CUL 114 Fundamentals of Baking 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CUL 104 and CUL 110, minimum grade "C"; may enroll concurrently in CUL 110
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

This course introduces students to basic theory, practices, and production techniques required to produce quality baked goods, such as yeast raised and quick breads, pies, cakes, and cookies. Emphasis is placed on time management, safe food handling, storage, and proper utilization of ingredients and equipment. The title of this course was previously Baking I.

CUL 115 Fundamentals of Pastry 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CUL 104 and CUL 110, minimum grade "C"; may enroll concurrently in CUL 110
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students are introduced to contemporary pastries applicable to today's food service industry. Emphasis is placed on pastry production techniques including demonstrations and practical applications of pate a choux specialties, gateaus, sauces, custards, mousses, churned and still frozen desserts. Students will also be introduced to plated dessert concepts and construction. The title of this course was previously Pastry I.

CUL 116 Fundamental Culinary Principles 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2 or MTH 067, may enroll concurrently; CUL 100 and CUL 110, minimum grade "C"; may enroll concurrently in both courses

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the fundamental language, concepts and theories of basic cookery. Students will develop culinary professionalism in various settings. Emphasis is placed on cookery theories and the purchasing and receiving of seasonal ingredients. Students will use time management, organizational and work coordination techniques as well as problem-solving skills. This course provides a conceptual foundation needed for the laboratory cooking courses.

CUL 118 Principles of Nutrition 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the basic principles of nutrition, health, and the relationship to foodservice. Students study nutrients including functions, digestion, absorption, food sources, and metabolism. Menu development focuses on the use of nutritious foods following the USDA Food Pyramid. Health, disease, food trends, and sustainable food systems are discussed in relationship to a healthy lifestyle.

CUL 120 Classical Kitchen Operations 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 110 and CUL 116, minimum grade "C"; CUL 110 may enroll concurrently

15 lecture, 90 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will focus on skills and techniques used in basic classical cooking. Students will develop an understanding of ingredients, nutrition, seasonality, and plate presentation. Students will also develop and execute the planning, preparation, and timing of a quality multi-course meal. This course contains material previously taught in CUL 111. The title of this course was previously Culinary Skills.

CUL 121 Modern Kitchen Operations 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 110 and CUL 116, minimum grade "C"; CUL 110 may enroll concurrently

15 lecture, 90 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will apply culinary concepts, terminology, and culinary techniques involved in the production of various food and menu items. Students will rotate through stations and be involved in all aspects of a commercial kitchen. Emphasis will be placed on student development in the cookery process, introduction to a la carte style modern kitchen operations, and teamwork concepts to gain experience of a restaurant kitchen. This course contains material previously taught in CUL 111. The title of this course was previously Introduction to Food Preparation Techniques.

CUL 132 Basic Cake and Wedding Cake Design 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 110 minimum grade "C", may enroll concurrently

15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

The course is designed to teach elementary cake decorating techniques. Students will learn proper preparation for frosting and will demonstrate a variety of applications. The course progresses into advanced techniques including rolled fondant, lace pieces, ruffles, borders, gum paste flowers, and wedding cake construction. CUL 130 and CUL 131 have been combined to form CUL 132.

CUL 135 International Cuisine and Culture: A Study Abroad 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 10 lab, 0 clinical, 0 other, 25 total contact hours

The course will focus on different aspects of the cuisine and culture of an international destination. Emphasis will be placed on how food and art influence lifestyle and culture. Students will explore how geographical and cultural components shape the use of different food products, cooking methods, service styles and other factors that have led to the current cuisine and culture.

CUL 140 Bakery Management and Merchandising 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 110, CUL 114 and CUL 115, minimum grade "C"
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to management and merchandising concepts utilized in bakeries. Emphasis is placed on cost control, sales concepts, customer service, and product presentation. Students will acquire hands-on experience in retail sales.

CUL 145 Introduction to Dining Room Protocol 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 110 minimum grade "C", may enroll concurrently
15 lecture, 90 lab, 0 clinical, 0 other, 105 total contact hours

Students in this course will be introduced to the service skills required in a restaurant that is open to the public. This live laboratory experience provides students with real world, hands-on experience in a learning setting. This unique restaurant allows students an opportunity to practice customer relations and management techniques while role-playing scenarios. Students will be given the opportunity to earn nationally recognized certification for professional portfolio development.

CUL 150 Food Service Management and Supervision 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 100 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides students an opportunity to gain a deeper understanding of management theory and supervision techniques related to operational management. This beginning course explores contemporary issues and trends managers face in today's hospitality operations. Students will be given the opportunity to earn nationally recognized certification for professional portfolio development. The title of this course was previously Food Service Management.

CUL 174 CUL Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; 15 credit hours in program; consent required
10 lecture, 0 lab, 0 clinical, 120 other, 130 total contact hours

In this course students gain skills from a new experience in an approved, compensated, culinary arts-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two co-op courses.

CUL 205 Pastry Arts and Design 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 110, CUL 114 and CUL 115, minimum grade "C"

15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

In this advanced course, students are introduced to the art of pastry design. Emphasis is placed on chocolate tempering, chocolate confections, chocolate, sugar and pastillage display pieces.

CUL 210 Advanced Kitchen Operations: Garde Manger 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 120 and CUL 121, minimum grade "C"

30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students are introduced to the classical food preparation of the cold food kitchen, presentation and design of platters and a center showpiece. Students will explore the history of cold food production and identify methods related to preparing food items served cold. Applying advanced culinary techniques, sanitation practices in preparing a variety of classical cold foods, and modernized presentation will be emphasized. The title of this course was previously Gardemanger.

CUL 211 Advanced Bread Production 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 110 and CUL 114, minimum grade "C"

30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students are introduced to advanced bread production techniques. The production of laminated yeast doughs, advanced yeast breads, sourdough starters, sourdough breads, pre-fermented doughs, international breads and display pieces are emphasized.

CUL 215 Advanced Cake Decorating 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 110 and CUL 132, minimum grade "C"

15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

This class is designed for students to learn the advanced techniques of cake decorating. Students will be introduced to new skills such as airbrushing, cake construction and mold making. Students will continue to advance their skills in piping, gumpaste and fondant work.

CUL 224 Principles of Cost Control 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Forecasting and cost control exercises are a major part of this course. Students are involved in analyzing all costs related to food, beverage, labor and supplies as well as discussions and exercises related to purchasing, receiving, and storage.

CUL 226 Advanced Dining Room and Beverage Management 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 145 minimum grade "C" and CUL 224 minimum grade "C", may enroll concurrently

30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours

In this course, students will operate a full service restaurant that is open to the public. This unique laboratory-restaurant allows students an opportunity to perfect professional customer relations and management techniques under normal working conditions. Additional emphasis will be placed on beverages and beverage service along with service of specialty foods and styles of service.

CUL 230 Advanced Kitchen Operations: American Regional 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 114, CUL 120, and CUL 121, minimum grade "C"

15 lecture, 90 lab, 0 clinical, 0 other, 105 total contact hours

This course will focus on the advance application of culinary technique, plate presentation, and quality food production. Students will explore and define flavor profiles, modernized attributes of food preparation and plate presentation of America Regional Cuisine. Professional kitchen management, culinary technique, and organizational skill implementation will be emphasized in relation to the study of regional foods of the United States. The title of this course was previously Quantity Food Production.

CUL 231 Advanced Kitchen Operations: Global Cuisine 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 114, CUL 120, and CUL 121, minimum grade "C"

15 lecture, 90 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students have the opportunity to advance their skills in high quality food production with exposure to food preparation of different cultures and cuisines of the world. Students will prepare, evaluate and present traditional international dishes focusing on cultural flavor profiles and indigenous ingredients. Additional fundamentals for this course include culinary technique refinery, management, and organizational skills relating to production of global foods. The title of this course was previously A La Carte Kitchen.

CUL 260 Catering and Banquet Production Management 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Completion of the Culinary and Hospitality Management program; consent required

15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

This advanced course provides the graduate culinary arts degree student with the ability to display knowledge of a variety of catering operations. This will include planning, organizing, marketing and executing receptions, parties, and special events.

Custom Cars & Concepts CCC

CCC 210 Custom Auto Body Technician I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 123 and ABR 124, minimum grade "B"; ABR 113 or ABR 135, minimum grade "B"

60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students who are interested in specialty car markets will build on experiences in prerequisite courses to evaluate their skills, while learning the techniques and applications of the design and building of custom cars. Students will learn to install and modify many aftermarket products such as hinge kits, remote door openers, custom enclosures, interior modifications and the process used to achieve show car quality sheet metal fit and finish. Teamwork, establishing project guidelines, time management, developing problem-solving skills, goal setting and the achievement of these goals will be emphasized. This course contains material previously taught in CCC 200 and CCC 240.

CCC 215 Custom Fabrication and Chassis Design I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 123 and ABR 124, minimum grade "B"; ABR 113 or ABR 135, minimum grade "B"

60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will be introduced to metal fabrication, chassis design and assembly of custom vehicles. Students build their skills using tools such as the iron worker, hand brake and foot or Beverly sheer. Topics such as choosing wheel/tire offset combinations and suspension modifications are covered. Class projects will be based on the design and fabrication of "one-of-a-kind" parts used on a custom vehicle. Working in a team environment, students will develop problem-solving skills and time management skills. Past project vehicles have gained national recognition and awards. This course contains material previously taught in CCC 201 and CCC 221.

CCC 250 Custom Auto Body Technician II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCC 210 minimum grade "B", may enroll concurrently

60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, emphasis will be placed on the application of a show quality paint job. Topics include the removal of factory body imperfections. Students will perform advanced paint operations such as "ghosting" of graphics, "smoking" of headlights/taillights and special sanding/buffing procedures as related to the final appearance of a custom car. This course contains material previously taught in CCC 220 and CCC 260.

CCC 255 Custom Fabrication and Chassis Design II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCC 215 minimum grade "B", may enroll concurrently

60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will continue to develop skills and gain valuable information as it relates to the completion of a project vehicle. Areas of study include fastener selection, electrical system upgrades, ride tuning of suspension, brakes, steering, and final safety inspections. Working with staff and other team members, students will devise a promotional plan, aid in the set up, display and help organize the project vehicles' debut. This course contains material previously taught in CCC 221 and CCC 241.

CCC 290 Mobile Electronics 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 111 and ABR 135, minimum grade "C" or ASV 131, minimum grade "C"

45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

This course covers the principles of mobile automotive electronics and integration of aftermarket electrical upgrades. The emphasis is centered on the planning and installation of performance audio, HID LED lighting, remote start and navigation systems as well as basic harness design and layout. It provides practical and theoretical experience necessary to fully understand the tools, equipment and organization of many custom electrical projects. Students will be prepared to take the Basic Installation Technician Exam to become a Mobile Electronics Certified Professional.

Dance DAN

DAN 101 Beginning Modern Dance I 1 credit

Level I Prerequisites: No Basic Skills

0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies basic modern dance exercises and steps. This course includes the opportunity to perform a modern dance piece in an end-of-term recital.

DAN 102 Beginning Modern Dance II 1 credit

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies complex modern dance exercises and steps. This course includes the opportunity to perform a modern dance piece in an end-of-term recital. This course may be completed for credit up to a maximum of two times.

DAN 103 Beginning Tap Dance I 1 credit

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

In this course, students are introduced to basic rhythmic structures, tap dance exercises and dance steps. Students learn the basic vocabulary of tap such as the names of steps and titles of meters. Students will have the opportunity to perform a tap dance piece in an end-of-term recital.

DAN 104 Beginning Tap Dance II 1 credit

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

In this course, students are introduced to more complex rhythmic structures, tap dance exercises and dance steps. Students increase their basic vocabulary of tap with names of advanced steps. Students will have the opportunity to perform a tap dance piece in an end-of-term recital. This course may be completed for credit up to a maximum of two times.

DAN 105 Beginning Jazz Dance I 1 credit

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies basic jazz dance exercises and steps. This course includes the opportunity to perform a jazz dance piece in an end-of-term recital. This course may be completed for credit up to a maximum of two times.

DAN 106 Beginning Jazz Dance II 1 credit

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies more complex jazz dance exercises and steps. This course includes the opportunity to perform a jazz dance piece in an end-of-term recital.

DAN 107 Beginning Ballet I 1 credit

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies the basic ballet barre and floor exercises and vocabulary. This course includes the opportunity to perform a ballet dance piece in an end-of-term recital. This course may be completed for credit up to a maximum of two times.

DAN 108 Beginning Ballet II 1 credit

Level I Prerequisites: No Basic Skills
Level II Prerequisites: DAN 107 minimum grade "C"
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces additional vocabulary and more complex floor and barre exercises than Beginning Ballet I. This course also includes the opportunity to perform a ballet dance piece in an end-of-term recital. This course may be completed for credit up to a maximum of two times.

DAN 111 Hip Hop Dance 1 credit

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies Hip Hop dance exercises and steps. This course includes the opportunity to perform a Hip Hop dance piece in an end-of-term recital. The title of this course was previously Popular Dance Forms.

DAN 112 Hip Hop Dance II 1 credit

Level I Prerequisites: No Basic Skills; DAN 111 minimum grade "C"
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies complex Hip Hop dance exercises and steps. Students will perform an advanced Hip Hop dance piece in an end of semester performance.

DAN 123 Dance Exercise I 1 credit

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This is an activity class focusing on fitness skills in which students participate in dance-related exercise. Based on the students' individual skill levels, they will learn correct techniques that will increase flexibility, mobility and strength. Students will also learn the relationship of exercise to health as they pursue their individual fitness goals. This course may be completed for credit up to a maximum of two times.

DAN 180 Dance Appreciation: The World of Dance 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

A lecture demonstration course defining dance and its religious, social, cultural, historical, sexual, and artistic qualities, this course will include the viewing of video documentation, discussion, research, and demonstration of a chosen dance form. This is not a dance performance class but rather an academic study of the history and societal role of dance.

DAN 200 Advanced Performance 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; DAN 101, DAN 105 and DAN 107, minimum grade "C"; each DAN course may enroll concurrently
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course provides the experienced dancer with the tools and language of choreography. Using these tools, the student will create and present dance works. The technical aspects of production will be introduced and utilized. This course culminates in an end-of-term production.

DAN 223 Dance Exercise II 1 credit

Level I Prerequisites: No Basic Skills; DAN 123
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This is a continuation of an activity class in which students participate in the exploration of diverse dance-related exercises and techniques. Students will explore a higher level of exercises with increased intensity for the development of physical flexibility, mobility and strength. Students will also explore the relationship of exercise to health.

Dental Assisting DEN

DEN 102 Managing Safe Practice in Dentistry 1 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Dental Assisting program
15 lecture, 9 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students address types of diseases and their transmission, the application of OSHA and CDC guidelines to dentistry, as well as the management of hazardous waste in the dental office. Students gain practical experience in the operation of sterilization equipment and disinfection techniques, as well as methods for the safe management and manipulation of various substances used in the dental treatment room.

DEN 106 Biomedical Science for Dental Assistants 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Dental Assisting program
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students cover the formation and eruption of the teeth and craniofacial growth and development. Topics such as cell, tissue and organ development and systems of the body will be examined. Types and uses of local and general anesthesia and medical emergency and appropriate response will be discussed.

DEN 107 Oral Anatomy 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Dental Assisting program
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This is an introductory course in head and neck anatomy. Topics include intraoral and extraoral structures of the skull and face, including bones, muscles, and soft tissue. Tooth surface annotation, cavity classification, occlusion and malocclusion are emphasized.

DEN 108 Dental Radiography 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Dental Assisting program; DEN 102 minimum grade "C", may enroll concurrently
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to concepts of radiography as they are applied to dentistry. Principles of radiation physics, health and safety factors effecting radiographic images, and quality control measures are examined. Students then use this knowledge to prepare radiographic images. The content of this course, when combined with DEN 128, satisfies the Administrative Rules of the Michigan Board of Dentistry educational requirements.

DEN 110 Basic Clinical Dental Assisting 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Dental Assisting program; DEN 102 minimum grade "C", may enroll concurrently
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students are introduced to dental assisting, receiving an overview of the history of dentistry, professional organizations, ethics, and the role of the dental health team. Students are introduced to the treatment room, equipment, and basic procedures. The application of OSHA and CDC guidelines used in four-handed dentistry are emphasized.

DEN 112 Dental Materials 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Dental Assisting program
30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours

In this course, dental assisting students gain theoretical knowledge of the uses and properties (chemical and physical) of the most commonly used dental materials. Students will gain laboratory and clinical experience in the manipulation, practical application and safe use of common dental materials and equipment in accordance with OSHA and CDC guidelines.

DEN 118 Preventive Dentistry 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Dental Assisting program; DEN 102, DEN 106 and DEN 107, minimum grade "C"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, dental assisting students receive a foundation in preventive dentistry. Methods to ensure the dental health of patients, including instruction in oral hygiene and proper nutrition are addressed. Etiology, prevention and control of dental caries and periodontal disease are emphasized. Content in this course was previously taught in DEN 109 and DEN 119.

DEN 120 Oral Diagnosis 1 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; DEN 102, DEN 107 and DEN 110, minimum grade "C"
15 lecture, 15 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students are provided with the necessary knowledge and tools to obtain diagnostic data and the recording of this data. The student gains practical experience in common charting techniques and records management.

DEN 128 Dental Radiography Practicum 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; DEN 108 minimum grade "C", may enroll concurrently
0 lecture, 22.5 lab, 22.5 clinical, 0 other, 45 total contact hours

This course provides students with both laboratory and clinical experience in producing dental radiographs. Infection prevention methods and maintaining patient and quality assurance records are emphasized. Students gain experience with mannequins in the laboratory, and apply these skills to patients in a clinical setting. The content of this course, when combined with DEN 108, meets the Administrative Rules of the Michigan Board of Dentistry educational requirements.

DEN 129 Oral Pathology and Dental Therapeutics 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; DEN 106 and DEN 107, minimum grade "C"
Corequisites: DEN 120
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students will study diseases of teeth and supporting structures, oral pathology and systemic diseases and their relationship to dental health. Dental assistant students gain experience in critical evaluation of a patient's health status and apply the essential skills needed to assist in common dental/medical emergencies. Various drugs and their effect on medical/dental care also are studied.

DEN 130 Clinical Practice 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; DEN 108, DEN 110, DEN 120, minimum grade "C"; DEN 120 may enroll concurrently
Level II Prerequisites: current CPR card
0 lecture, 0 lab, 120 clinical, 0 other, 120 total contact hours

In this course, Pathway I students are provided with clinical application of all previous knowledge as they gain clinical experience in the WCC Dental Clinic and in the University of Michigan Dental Clinic. Students assist during basic preventive and operative procedures, monitor vital signs, apply OSHA and CDC guidelines, sterilize instruments and manage patient records.

DEN 131 Principles of Dental Specialties 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; DEN 110 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the role of the dental assistant in dental specialties. The latest concepts in dental specialties such as prosthodontics, oral surgery, endodontics, orthodontics and dentofacial orthopedics are presented by dental specialists.

DEN 202 Advanced Clinical Practice 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; DEN 130 minimum grade "C"
Level II Prerequisites: Current CPR card
0 lecture, 0 lab, 200 clinical, 4 other, 204 total contact hours

This course builds on the student's clinical experience in DEN 130. The student develops advanced clinical skills in a variety of dental settings. Students must complete rotations at different clinical sites and provide evidence of such. Students will complete journals, case studies, a clinical portfolio and participate in seminars relating to their clinical experiences.

DEN 204 Advanced Functions 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Pathway I students - DEN 202 minimum grade "C", may enroll concurrently; or Pathway II students - Admission to Dental program
Level II Prerequisites: current CPR card
15 lecture, 105 lab, 15 clinical, 0 other, 135 total contact hours

This course is designed to provide dental assisting students with knowledge and skill in performing legally delegated intra-oral functions. In Michigan, the legal duties of the Registered Dental Assistant are outlined in the Administrative Rules of the Michigan Board of Dentistry.

DEN 205 Expanded Duties for the RDA 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: Current RDA license
15 lecture, 30 lab, 15 clinical, 0 other, 60 total contact hours

This course is designed for the current registered dental assistant in the State of Michigan who must meet the requirements of the Public Health Code Section 333.16611 and the Administrative Rules of the Board of Dentistry Rule R 338.11404a - R 338.11405c.

DEN 212 Dental Practice Management 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; DEN 107 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the business practices needed to be an effective team member in a dental office. Students will explore practices such as payroll, accounts receivable and payable as well as appointment scheduling. Students will focus on formatting and preparing written communications. Throughout this course, accuracy and attention to detail will be emphasized. Students will prepare to seek employment as entry-level dental assistants through writing resumes and letters of application and preparing for interviews.

DEN 230 Alternative Dental Assisting Education Project 9 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Dental Assisting program - Pathway II students
30 lecture, 16 lab, 600 clinical, 0 other, 646 total contact hours

This course is designed specifically for the on-the-job trained dental assistant who has been admitted to the Dental Assisting Program with advanced standing after successfully passing all three components of the Dental Assistant National Board CDA Examination. The student demonstrates clinical, laboratory, and radiographic skills in their offices of employment. Students also observe two specialty dental practices.

Drama DRA

DRA 152 Acting I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students receive an introduction to acting skills and techniques through improvisation and the presentation of dramatic scripts. Voice projection, staging, character development and emotional expression are explored in theatre games, monologues and scenes. The skills apply to stage and film acting, and will appeal to anyone interested in developing acting, dramatic staging, presentation and/or communication skills. All skill levels are welcome. The title of this course was previously Acting for Theatre I.

DRA 180 Theatre Appreciation 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will foster an appreciation of theatre as a collective performing art and be introduced to major dramatic genres and performance styles of theatre. Exploring a diversity of historical and cultural contexts of theatre, students will study aspects of drama, including plot, characterization and setting to enhance their ability to critique theatrical events and dramatic literature.

DRA 204 Improvisational Acting 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; DRA 152 minimum grade "C", may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this interactive acting course, students will be introduced to the art of performing without a script. Various forms of impromptu exercises and traditional acting games are explored to enhance skills in spontaneity, comic timing, concentration, verbal and non-verbal expression, characterization and group cooperation. These skills apply to stage and film acting. Students will practice developing improvisational sketches and prepare to perform before an audience. The title of this course was previously Improvisational Acting for the Theatre.

DRA 208 Acting II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; DRA 152 minimum grade "C", may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a continuation of the introduction to acting skills and techniques, exploring a diversity of intermediate approaches through improvisation and the presentation of dramatic scripts. Voice projection, staging, character development and emotional expression are explored in theatre games, monologues and scenes. The skills apply to stage and film acting, and will appeal to anyone interested in developing acting, dramatic staging, presentation and/or communication skills. The title of this course was previously Acting for Theatre II.

DRA 240 Acting III 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; DRA 208 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is a performance-oriented course with an emphasis on ensemble acting skills and techniques. These skills apply to stage and film acting. There is an emphasis on more advanced voice projection, staging, physicality, character development and emotional expression. This course will focus on advanced ensemble projects involving script adaptation, script interpretation and group performance skills necessary for performing in an ensemble theatre setting that may include performances for the community or campus. The lessons, focusing on dramaturgic and acting skills, vary depending on the literature selections, which change each semester.

DRA 260 Acting IV 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; DRA 240 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this advanced performance-oriented course, students apply their knowledge of ensemble acting skills and techniques using more advanced voice projection, staging, physicality, character development and emotional expression in performance projects. Students will demonstrate their skills at script adaptation, script interpretation and group performance necessary in an ensemble theatre setting. The lessons, focusing on dramaturgic and acting skills, vary depending on the literature selections, which change each semester.

Economics ECO

ECO 110 Introduction to Economics 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a basic one-semester introduction to economics. The course introduces scarcity and rational choice, markets, "supply and demand," the business firm costs, and competition. Macroeconomic topics include GDP, unemployment, and inflation, as well as money, banking, and government stabilization policy. International trade issues are also considered.

ECO 211 Principles of Economics I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4 or MTH 125 or MTH 160, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is the first half of the principles of economics sequence. It emphasizes measurement and determination of inflation, unemployment, output, growth, and national income. The role and creation of money are discussed. Fiscal and monetary policy are considered. Supply and demand analysis is developed as a foundation.

ECO 222 Principles of Economics II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ECO 211 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is the second half of Principles of Economics. Emphasis is on microeconomic principles of demand, supply and problems relating to prices and resource allocation.

ECO 280 International Trade and Globalization 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4; ECO 211 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course explores trade between countries. It explains why international trade takes place, and examines the costs and benefits associated with increasing globalization. Protectionism, immigration reform, oil prices, and NAFTA are discussed, along with the trade's effects on living standards and the environment. Finally factors that affect growth in developing nations are examined, along with the roles that the IMF, World Bank, and WTO play. The title of this course was previously International Economics.

Electrical Worker Apprentice EWA

EWA 100 Introduction to Electrical Apprenticeship 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course provides an overview of the electrical apprenticeship program and the responsibilities of an electrician. History, safety, OSHA regulations, and job site conditions are explored. Organizing, motivation and leadership techniques, and labor laws are also covered. Limited to IBEW 252 Apprentices.

EWA 110 Job Information 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students study commonly used tools and materials needed for installing complete electrical systems. Shock hazards are discussed and how to use test instruments to check a circuit to verify if it is energized. How to measure voltages and currents on energized circuits, rigging and lifting of loads, and wire insulation properties are also covered. Limited to IBEW 252 Apprentices.

EWA 120 Blueprint Reading 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

The course teaches students how to identify line types, use of drawing tools, and techniques used in creating blueprints. Students also study drafting scales, electrical symbols, mechanical symbols, and job specifications to prepare them for transferring written information into the physical installation of complete electrical systems. Limited to IBEW 252 Apprentices.

EWA 130 DC Theory 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students study the basic structure of the atom and how current flow occurs in conductor materials. Circuit analysis techniques are applied to series, parallel, and combination circuits. Also covered is an introduction to generation of electricity using the principles of magnetism and electromagnetism. Limited to IBEW 252 Apprentices.

EWA 140 Codeology 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course introduces electrical apprentices to the language and format of the National Electrical Code. An understanding of the NEC is fundamental to making safe and proper electrical system installations and this course teaches valuable skills for finding, studying, and interpreting code rules. Limited to IBEW 252 Apprentices.

EWA 150 Code Practices 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

A comprehensive article-by-article study of the National Electrical Code is presented in this course. The apprentice will discuss and analyze in detail the rules in each article of the NEC as they apply to the installation of each part of a complete electrical system. A thorough understanding of the NEC is requisite for successfully passing the mandatory State of Michigan licensing exam. Limited to IBEW 252 Apprentices.

EWA 160 AC Theory 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course studies alternating current systems and circuits. The effects of inductance and capacitance in alternating current systems are calculated using vector analysis techniques so that the apprentice can understand, design, and troubleshoot the alternating current systems that he will install and maintain. Resonance and power factor correction as power quality issues are also discussed. Limited to IBEW 252 Apprentices.

EWA 170 Semiconductors 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

Students are introduced to the basic theory of operation of semiconductor devices. The basics manufacture and construction of P-type and N-type semiconductor materials and the theory of the PN junction are discussed and then expanded upon with the introduction multilayer devices. Limited to IBEW 252 Apprentices.

EWA 180 Grounding 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course presents an in-depth study of the requirements of Article 250 of the National Electrical Code as it relates to grounding and bonding of systems and equipment. The student will learn the definitions for each part of the grounding installation and will use code tables to determine the correct sizing of the conductors to be installed. Equipment, materials, and techniques for proper installations will also be covered. Limited to IBEW 252 Apprentices.

EWA 190 Transformers and Electrical Safety 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

The student will learn about OSHA requirements on construction work sites and the proper selection of the proper personal protective equipment and clothing. Electrical safety culture will be discussed and related to transformers which are the most common source of electrical energy in any building. Arc fault current calculations will be presented as part of NFPA 70E requirements for determining safe approach distances for energized equipment. Limited to IBEW 252 Apprentices.

EWA 200 Motors and Controls 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will learn to identify various motor types by their construction and component parts and will learn the operating characteristics of common types of motors that are currently in use in most types of buildings. Reading and understanding nameplate data is presented as a fundamental need for the installation and maintenance of motors. Students will learn to develop control circuits using ladder diagrams to construct complex controls incorporating time delay, interlocking, reversing, plugging, jogging and other fundamental control circuits. Limited to IBEW 252 Apprentices.

EWA 210 Digital Electronics and PLC's 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course provides knowledge of digital controls utilizing AND, OR, NAND, XOR, and XNOR logic. Students also study applications of these digital circuits in programmable logic controller installations and applications. Relay ladder logic programming language is studied to provide the student the fundamentals for entering a control program into a PLC. Limited to IBEW 252 Apprentices.

EWA 220 Instrumentation 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

Students learn the fundamentals of process control systems. Topics include instrument symbols, test procedures, instrument calibration, installation, and documentation. Students learn measure pressure, temperature, flow, and levels as well as how to calculate expected readings using range and span information. Limited to IBEW 252 Apprentices.

EWA 230 Fire Alarms, Telephone and Security Alarms 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course teaches the fundamentals of fire alarm, telephone, and security alarm systems. Topics include: installation, inspection, testing, and maintenance. Also covered are network cabling, pathways, system performance, and administration. Limited to IBEW 252 Apprentices.

EWA 240 Distributed Power Generation and Power Quality 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

Students will learn basics of UPS systems, solar photovoltaic technology, and fuel cell technology as it would apply to the design, installation, inspection, and maintenance of these systems. Also studied are power quality problems that affect all buildings' distribution systems. Topics include: types of PQ problems, causes of PQ problems, locating the problems, PQ test equipment, and solving PQ problems. Limited to IBEW 252 Apprentices.

EWA 250 Technical Mathematics 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will learn basic principles of applied math using Ohm's Law. Students learn to solve circuitry problems, wire resistance, voltage drops, AC circuit parameters, power factor, and phase angle. Limited to IBEW 252 Apprentices.

EWA 260 Applied Science 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course prepares apprentices in the electrical trades to accurately apply principles of science to their work. Topics include: the structure of matter, the physical characteristics of copper and aluminum as conductor materials, the atomic structure of conductors versus insulators (dielectrics), temperature-pressure enthalpy diagrams for heating and cooling cycles, and light propagation in fiber optic media. Limited to IBEW 252 Apprentices.

Electricity/Electronics ELE

ELE 040 Residential Wiring 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 45 lab, 0 clinical, 0 other, 45 total contact hours

This course is a practical hands-on course that has been designed to help students better understand wiring techniques and safety considerations for dealing with a residential wiring system. A great deal of "hands-on" time is offered and is devoted to working with the wiring materials and constructing circuits of the type found in the home. Typical of the kinds of circuits that are discussed and wired by the student are: duplex outlet circuits, dimmer circuits, three and four-way switch circuits, CGI circuits, lawn and garden lighting circuits, electrical dryer and electric stove circuits. Grading is by the satisfactory/unsatisfactory system.

ELE 041 Residential Wiring II 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This course is a continuation of ELE 040. It is a hands-on projects course designed to allow students to better understand more advanced wiring techniques when working on residential wiring. Part of the course is discussing individual projects and drawing the necessary diagrams. Most of the course is devoted to working with the electrical materials, and constructing the type of circuits found in the home. The new circuits wired include: main panel grounding, sub panels, heaters, and security.

ELE 106 Renewable Energy Technology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides a comprehensive introduction to the principles and practical applications of solar, wind, geothermal, hydroelectric, ocean and biomass renewable energy technologies. Motivations for developing renewable energy will be examined and students will evaluate their personal energy footprint and create a plan to reduce it. Demonstrations, field trips and labs will provide direct contact with the technology. Students will work in teams on a design project to explore one technology in depth.

ELE 111 Electrical Fundamentals 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
60 lecture, 30 lab, 0 clinical, 0 other, 90 total contact hours

This is an introductory course in AC and DC concepts and circuits. The course is designed to foster an intuitive understanding of electrical concepts appropriate for occupations involved with the installation, maintenance, and troubleshooting of electrical circuits and devices. Lab exercises deal with the use of test equipment for the purpose of verifying circuit operation and troubleshooting circuit faults. Students must have good numerical and algebraic skills to be successful in this course.

ELE 134 Motors and Controls 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: ELE 111 minimum grade "C-" or equivalent
60 lecture, 30 lab, 0 clinical, 0 other, 90 total contact hours

This course introduces students to the theory and application of AC and DC electrical machines and their controls. Topics include DC generators, DC motors and controls, 3 phase power, 3 phase transformers, alternators, 3 phase and single phase AC motors and controls, electronic motor drives, synchronous motors, servo motors and stepper motors. In weekly lab assignments, students will read and interpret schematic diagrams, connect motors and controls, test and troubleshoot motors and controls.

ELE 174 ELE Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ELE 111 or CST 150; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, the student gains skills from a new experience in an approved, compensated, electronics related position. Together with the instructor and employer, the student sets up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two possible co-op experiences.

ELE 204 National Electrical Code 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: ELE 111 or equivalent
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students learn the use of the NEC as a tool to plan the safe installation of electrical equipment in residential, commercial, and industrial locations. Students determine the required number and sizes of branch circuits, conductors, fuses, raceways and boxes. Other topics include grounding, motor circuits and controls, local codes, and code changes. Recommended for students interested in industrial control technology and electrician apprentices.

ELE 211 Basic Electronics 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: ELE 111 or equivalent
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

Basic Electronics is a beginning lecture and laboratory course covering solid state devices. It includes the theory and application of diodes, and both bipolar and field effect transistors. These devices are tested and then circuits using them are constructed and tested in the laboratory using common laboratory equipment. Prerequisites will be checked by the instructor on the first day of class.

ELE 224 Introduction to PLCs 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: ELE 111 minimum grade "C-" or equivalent
60 lecture, 30 lab, 0 clinical, 0 other, 90 total contact hours

This course is an introduction to programmable logic controllers (PLCS) which covers PLC hardware, relay-type, timer, counter, data manipulation, math and program control instructions, with an emphasis on troubleshooting. Weekly lab assignments use Allen Bradley SLC-500 and PLC-5 controllers and RSLogix software. This course is offered for students, electrician apprentices, electricians, technicians, and engineers.

ELE 254 PLC Applications 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
Level II Prerequisites: ELE 224 minimum grade "C-"
60 lecture, 30 lab, 0 clinical, 0 other, 90 total contact hours

This is an advanced, hands-on course in PLC system concepts and troubleshooting. Topics include analog I/O, data manipulation, block transfer, on/off and PID closed loop control, data communications (DH+ and remote I/O), operator interface terminals (PanelView), and sequential systems. SLC-500 and PLC-5 processors, and RSLogix500, RSLogix5, and PanelBuilder software are used in lab exercises. This course is intended for students in industrial electronics and automation technology, electrician (and other) apprentices, and industrial technicians. Also for engineers desiring hands-on PLC experience.

ELE 274 ELE Co-op Education II 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ELE 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses.

ELE 284 Control Logic Programming 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: ELE 254 minimum grade "C-" or equivalent
60 lecture, 30 lab, 0 clinical, 0 other, 90 total contact hours

This is a course in industrial control logic. Students will learn combinational and sequential relay logic analysis and recognize some logic design and simplification techniques. Lecture and laboratory topics will include control systems, number systems and codes, Boolean logic, ladder logic diagrams, IEC symbols, and the programming and use of programmable logic controllers (PLCs) to implement combinational and sequential control applications.

Engineering Technology EGT

EGT 100 Introduction to Product Design 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will focus on the history of product design and the journey to product development. Students will generate concepts by designing a physical product for production by establishing engineering specifications using media investigation and material application. Students will focus on user centric design processes and critique design details and assemblies.

EGT 125 Advanced Engineering Design Technology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

Advanced fundamentals of creating 3D parametric models using graphic environment. This course will focus on parts, assemblies and drawings.

EGT 150 Engineering Design Technology Material Science 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will be introduced to the structures and properties of metals, ceramics, polymers, wood, composites, and electronic materials. Students will also gain an understanding of the processing and design limitations of materials. Topics fundamental to the further study of material procurement, testing and failure will be emphasized as a foundation to engineering design technologies.

EGT 175 Engineering Design Technology Material Processing 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; EGT 150 minimum grade "C", may enroll concurrently
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will apply the principles of basic sciences and engineering to understanding the behavior of materials, their development and applications and to show an understanding of material processing technology for the manufacture of products. Students will also have an understanding of the processing factors that influence selection in design.

English ENG

ENG 000 Writing Center 0 credit

0 lecture, 15 lab, 0 clinical, 0 other, 15 total contact hours

ENG 000 is a required co-requisite for all students enrolled in English 050, 051, 090, 091, 100 and 111. Students enrolled in ENG 000 complete writing assignments - at the sentence, paragraph, or essay level appropriate to their writing course - that are evaluated in the Writing Center by Writing Center staff.

ENG 010 Writing Practicum 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 15 lab, 0 clinical, 0 other, 15 total contact hours

This course provides individualized instruction on composition components, including grammar, punctuation, research, and documentation. Enrollment is restricted to Writing Center tutors only. Satisfactory/unsatisfactory grading is used.

ENG 050 Basic Writing I 4 credits

Level I Prerequisites: Academic Reading Levels 3 or 5; Academic Writing Level 2 only

Corequisites: ENG 000
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This class is not intended for students who speak English as their second language. Inexperienced writers will gain confidence writing formal English sentences and paragraphs in and out of class. Students will also utilize the Writing Center and complete required assignments as part of the class. It is strongly recommended that students enroll in a reading course before or at the same time as this

course.
Satisfactory/unsatisfactory grading is used. Satisfactory completion of ENG 050 is required to advance to ENG 051.

ENG 051 Basic Writing II 4 credits

Level I Prerequisites: ENG 050 with grade "S"
Corequisites: ENG 000
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This class is not intended for students who speak English as their second language. This is a continuation of English 050, and inexperienced writers will gain confidence writing formal English sentences and paragraphs in and out of class. Students will complete more advanced individual and Writing Center assignments. Satisfactory/unsatisfactory grading is used. Satisfactory completion of ENG 051 is required to advance to ENG 090 and will raise the student's Academic Writing level to 3.

ENG 090 Writing Fundamentals I 4 credits

Level I Prerequisites: Academic Reading Level 3; Academic Writing Level 3 only
Corequisites: ENG 000
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students focus on strengthening the writing skills needed in preparation for college-level coursework. The emphasis is on developing and organizing ideas in paragraphs and essays. Satisfactory/unsatisfactory grading is used. Satisfactory completion of ENG 090 is required to advance to ENG 091.

ENG 091 Writing Fundamentals II 4 credits

Level I Prerequisites: ENG 090 with grade "S"
Corequisites: ENG 000
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is a continuation of ENG 090, where the students focus on strengthening the writing skills needed in preparation for college-level coursework. The emphasis is on developing and organizing ideas in paragraphs and essays. In order to pass with a grade of "C" or better and be eligible to take 100 level English courses, students must demonstrate at least "C" level competency on in-class writing by the end of the semester. Successful completion of this course with a minimum grade of "C" will raise students' Academic Writing level to 6.

ENG 100 Introduction to Technical and Workplace Writing 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Corequisites: ENG 000
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students learn how to write effective technical and workplace documents such as emails, letters, memos, invoices, work orders, labor reports, resumes, and short reports. Students write documents in response to situations that they will likely encounter on the job. Emphasis will be placed on planning and writing clear, concise, and audience-focused documents. During the first week of class, students must demonstrate a writing proficiency at the college level. The title of this course was previously Written Communication.

ENG 107 Technical Writing I — 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn the technical writing process and apply it to writing tasks similar to those they will encounter on the job. Students develop, organize, and write documents such as memos, technical definitions and descriptions, instructions, reports, and presentations. At the end of the semester, students prepare an electronic portfolio of their technical writing assignments. Note: During the first week of class, students must demonstrate a writing proficiency at the college level.

ENG 111 Composition I — 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Corequisites: ENG 000
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will write effective academic essays using a variety of rhetorical patterns for various purposes and audiences. Reading materials serve as a basis for essays and classroom discussions. Students write both in-class and out-of-class essays. During the first week of class, students must demonstrate their writing proficiency. In order to pass with a "C" or better, students must demonstrate at least "C" level competency in documented essay writing by the end of the semester.

ENG 140 Horror and Science Fiction — 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a study of science fiction and horror in literature with emphasis on literary, historical, psychological and cultural relevance. Short stories, novels, poems, films, and/or nonfiction related to both genres are analyzed and discussed. Students will apply critical-thinking skills to assess literary works. Specially designated sections may focus on horror, science fiction, subgenres or major authors.

ENG 160 Introduction to Literature: Poetry and Drama — 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to give an understanding of literature through writing assignments, close reading and discussion of selected works of poetry and drama. Students will apply critical thinking skills to assess literary works.

ENG 170 Introduction to Literature: Short Story and Novel — 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students explore short stories and the novel as they provide blueprints for living, self-discovery, and recreation. Students will be introduced to the elements of fiction, various literary genres and their cultural, historical contexts. They will be given a literary vocabulary to use in assessing the value of literary works. Students will be expected to analyze fiction critically in class discussions and through formal and informal writings. Specially designated sections of the course may be devoted to special topics such as mystery, war, westerns, women's issues, popular fiction, etc.

ENG 181 African-American Literature 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides a survey of the African-American experience in the world of literature. It is an introduction to African-American thought through readings in poetry, fiction, drama, autobiography and the essay. Students will apply critical thinking skills to assess literary works.

ENG 199 Technical Writing Internship 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Technical Writing program and ENG 208 minimum grade "C"
0 lecture, 0 lab, 0 clinical, 45 other, 45 total contact hours

In this course, students gain skills in technical communication through work assignments provided by a host company and supervised by both the company supervisor and the instructor. At the beginning of the internship, specific learning objectives related to the assignments are developed, hours of work are established, and instructor conference times are set. At the end of the internship, the supervisor evaluates the student performance, and the student writes a self-evaluative report based on the experience.

ENG 200 Shakespeare 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will read, explore and analyze the varieties of Shakespeare's works. Genres, styles and language will be discussed. Students will analyze the major themes that inform the nature and variety of human experiences. Students apply critical thinking skills to interpret and evaluate these literary works.

ENG 208 Technical Writing II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ENG 107 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn how to manage, design, write, and edit technical documentation. At the beginning of the project, students create a project plan, schedule, and design template that will guide them through the writing and editing phases of their project. The final document (3,000 word min.) will be published in PDF format. In addition, students research a current issue in the field of technical communication. At the end of the course, students create an electronic portfolio to showcase their work.

ENG 209 Technical Writing III 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ENG 208 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this hands-on course, students explore the concepts and challenges of single sourcing and topic-based authoring. Building on writing and project management skills learned in the prerequisite course, students use industry standard software such as MadCap Flare and Adobe RoboHelp to create technical information that can be customized for print, online, and mobile device delivery.

ENG 211 American Literature I - Before 1900 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The course provides a survey of the literature of North America (continental U.S.) from the 17th century to 1900. Students will apply critical thinking skills to assess literary works.

ENG 212 British Literature - Before 1800 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The course analyzes British literature from its origins until 1800. Readings stress the major works and authors of the period (e.g., "Beowulf", Chaucer, Shakespeare, Milton, Pope, Swift). Students will apply critical thinking skills to assess literary works.

ENG 213 World Literature I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course students will analyze world literature through literary masterpieces written from the time of ancient Greece through the Renaissance. Students will apply critical thinking skills to assess literary works.

ENG 214 Literature of the Non-Western World 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a survey of major world literature excluding European and American literature. Typically, the course covers selections from Africa, Asia, the Middle East and the sub-continent of India, and includes a variety of traditional, modern and contemporary works of literature to introduce and explore the world's literary cultures. Students will apply critical thinking skills to assess literary works.

ENG 218 Technical Writing IV 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ENG 208 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this hands-on course, students plan, design, write, edit and publish screencasts (video screen captures) of software simulations and demonstrations that might be used in technical training or eLearning. Students use screencasting software (such as Adobe Captivate or MadCap Mimic) to complete their projects, which include scripted narration. Planning documents and final screencasts are posted online.

ENG 222 American Literature II - 1900 to the Present 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides a survey of the literature of the United States from 1900 to the present, including important pieces of modern and contemporary American literature. Students will apply critical thinking skills to assess literary works.

ENG 223 British Literature - After 1800 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course analyzes British literature from 1800 to present. Readings stress the major works and authors of the period (e.g. Blake, Keats, Browning, Hopkins, Hardy, Conrad, Yeats, Joyce, Eliot). Students will apply critical thinking skills to assess literary works.

ENG 224 World Literature II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a continuation of ENG 213. It analyzes some of the great literary works of the Western tradition since the Renaissance and demonstrates how these works have contributed to present cultural heritage. Students will apply critical thinking skills to assess literary works.

ENG 226 Composition II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ENG 111 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Composition II is the second semester of the two-course freshman writing sequence. The course is a continuation of "ENG 111: Composition I," and further develops critical reading and logical thinking skills. Students will write argumentative essays using a variety of formats. Research writing and documentation is emphasized. This course was previously ENG 122.

ENG 240 Children's Literature 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a survey of prose, poetry and illustrated books suitable for the preschool, elementary and early adolescent child. This course is required of students entering elementary education; also, the course is beneficial for library studies or work, teacher's aide program, nursery and day care work and as general education for parents. Students will apply critical reading, thinking and writing skills to assess literary works.

ENG 242 Multicultural Literature for Youth 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a survey of prose, poetry and illustrated books exploring the experience of minority youth in American society suitable for the preschool through early adolescent child. Students will apply critical reading, thinking and writing skills to assess literary works. This course is strongly recommended for students entering elementary education; also, the course is beneficial for library studies or work, teacher's aide programs, nursery and day care work and as general education for parents.

ENG 245 Job Search Success Seminar 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students explore how to conduct a successful job search. Topics covered include developing a systematic job search strategy, preparing related documents (such as a cover letter and resume), and developing effective interviewing skills. Students also learn the benefits of preparing a portfolio to share with prospective employers. The title of this course was previously Career Practices Seminar.

ENG 260 Journal Workshop I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to various writing techniques as a means to self-discovery, self-awareness and expression. There is a choice of many ways to use writing to tell one's stories, address issues, cultivate creativity and celebrate life. Students will be expected to spend a substantial amount of time journaling outside of class. Journals remain confidential. Some self-selected journal entries are shaped into polished, creative pieces meant for sharing with others. Students will be expected to provide feedback to one another in a respectful and helpful manner.

ENG 261 Journal Workshop II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ENG 260 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will apply their knowledge of various writing techniques to continue their self-discovery, self-awareness and expression through journaling. They will become more adept at choosing an effective writing technique that aligns with their goal. Students will be expected to spend a substantial amount of time journaling outside of class. Journals remain confidential. Students will work on individual projects and some self-selected writings will be shaped into polished, creative pieces meant for sharing with others. Students will be expected to provide in-depth feedback to one another in a respectful and helpful manner.

ENG 270 Creative Writing I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students explore how writers discover ideas by writing and revising original poetry, fiction, drama or non-fiction. Students use the basic elements of literary genres and a literary vocabulary to appreciate and evaluate creative writing. Students become critical readers of creative expression through writing workshops, sharing their work and reviewing others' work in a writing community that provides a supportive audience. Some course sections may focus on a particular genre such as poetry, fiction, drama or non-fiction.

ENG 271 Creative Writing II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ENG 270 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students apply their knowledge of how writers discover ideas through writing and revising original poetry, fiction, drama or non-fiction. They become more adept at using a literary vocabulary both in class discussions and in their writing. Students will recognize the elements of good writing, such as concrete and sensory details, and utilize these elements in their own writing. They will be able to provide an in-depth analysis, such as explanations and interpretations, of writing samples. Students may choose to focus on a specific genre or continue their exploration of all genres.

English as a Second Language ESL

ESL 023 High Beginning ESL Reading and Writing 4 credits

Level I Prerequisites: ESL GVR Level E-1 and ESL Listening Level E-1
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will move beyond minimal survival English in the areas of reading and writing. The reading portion focuses on building vocabulary as well as reading skills. The writing portion focuses on the production of sentences on basic topics with much guidance. Satisfactory/unsatisfactory grading is used. This course contains material previously taught in ENG 023 High Beginning ESL Reading and Writing.

ESL 024 High Beginning ESL Grammar and Communication 4 credits

Level I Prerequisites: ESL GVR Level E-1 and ESL Listening Level E-1
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will move beyond minimal survival English toward communication of daily living. This class is designed for students who have had some exposure to and/or instruction in English. Grammar and communicative competence are emphasized. This class can be taken concurrently with ESL 023 and ESL 025. This course contains material previously taught in ENG 024 High Beginning ESL Grammar and Communication.

ESL 025 High Beginning ESL Listening and Speaking 4 credits

Level I Prerequisites: ESL GVR Level E-1 and ESL Listening Level E-1
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will move beyond minimal survival English toward communication for daily living. The speaking portion of this class will focus on the English sound system, basic pronunciation, and practical conversation skills. The listening portion focuses on the comprehension of spoken English. This course contains material previously taught in ENG 025 High Beginning ESL Listening and Speaking.

ESL 128 Low Intermediate ESL Reading and Writing 4 credits

Level I Prerequisites: ESL GRV Level E-2 and ESL Listening Level E-3
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will lay the foundations for reading and writing improvement needed at the intermediate ESL level. Emphasis is placed on the development of skills, reading for pleasure, and writing about personal topics. Vocabulary development, active reading strategies, silent reading and comprehension, and English sentence structure are covered. Students must satisfactorily complete their work before advancing to a higher level reading or writing course. This course contains material previously taught in ENG 027/028 Low Intermediate ESL Reading and Writing I and II.

ESL 132 Intermediate ESL Grammar 4 credits

Level I Prerequisites: ESL GRV Level E-2 and ESL Listening Level E-3
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this intermediate level course, students expand upon their knowledge of English grammar and vocabulary and their ability to understand and use spoken and written English. Special attention is given to the appropriate use of the forms studied. Successful completion of ESL 132 is required for entrance into ESL 161. This course contains material previously taught in ENG 030/032 Intermediate ESL Grammar I and II.

ESL 134 Intermediate ESL Reading 4 credits

Level I Prerequisites: ESL GVR Level E-3 and ESL Listening Level E-3
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students further develop independent reading comprehension skills for ESL. Emphasis is placed on vocabulary development, active reading strategies, variable reading rates, independent silent reading and comprehension. Students must satisfactorily complete their work before advancing to a higher level reading course. This course contains material previously taught in ENG 033/034 Intermediate ESL Reading I and II.

ESL 135 English Listening, Pronunciation and Conversation (ESL) 4 credits

Level I Prerequisites: ESL GVR Level E-3 and ESL Listening Level E-3; Students with ESL Reading Level E-2 may enroll in ESL 128 concurrently
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will improve their aural and oral communication skills. The three components of the course are: systematic introduction to and practice with the sound system of American English, especially suprasegmentals; extensive listening practice; and introduction to and practice with appropriate conversational skills, such as offering, accepting, and refusing invitations, and asking for and giving opinions. This course contains material previously taught in ENG 035 English Listening, Pronunciation and Conversation (ESL).

ESL 138 Intermediate ESL Writing 4 credits

Level I Prerequisites: ESL GVR Level E-4 and ESL Listening Level E-3; Students with ESL GVR Level E-3 may enroll in ESL 132 and ESL 134 concurrently
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students learn to internalize both the grammar and vocabulary that they have been studying by using it to produce well-formed sentences and paragraphs. The focus is on strengthening the students' ability to express themselves in written English. This course contains material previously taught in ENG 037/038 Intermediate ESL Writing I and II.

ESL 161 Advanced ESL Grammar 4 credits

Level I Prerequisites: ESL 138 minimum grade "C" may enroll concurrently or ESL GVR Level E-4 and ESL Listening Level E-4; Students with ESL Listening Level E-3 may enroll in ESL 135 concurrently
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students study sophisticated forms of English grammar, including subject/verb inversion, reduced clauses, and complex verb phrases. Special attention is given to the appropriate use of the forms studied. Successful completion of ESL 161 is required for progressing into classes with native speakers. This course contains material previously taught in ENG 060/061 Advanced ESL Grammar I and II.

ESL 165 Advanced ESL Speaking, Listening and Pronunciation 4 credits

Level I Prerequisites: ESL GVR Level E-4 and ESL Listening Level E-4
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, international students will develop the listening, note taking and speaking skills needed for success in American college classrooms. Instructional activities will include a variety of formal speech acts, such as introducing, announcing and negotiating. In addition to mastering English Phonemes and suprasegmentals, students will focus on correct pronunciation of high-level vocabulary from the Academic Word List in the context of formal speaking. In this course, international students will develop the listening, note taking and speaking skills needed for success in American college classrooms. Instructional activities will include a variety of formal speech acts, such as introducing, announcing and negotiating. In addition to mastering English Phonemes and suprasegmentals, students will focus on correct pronunciation of high-level vocabulary from the Academic Word List in the context of formal speaking. The title of this course was Advanced ESL Speaking and Listening and this course contains material previously taught in ENG 065 Advanced ESL Speaking and Listening.

ESL 168 Advanced ESL Writing 4 credits

Level I Prerequisites: ESL GVR Level E-5 and ESL Listening Level E-4 or ESL 161 minimum grade "C"; Students with ESL GVR E-4 and Listening Level E-4 may enroll in ESL 161 concurrently or Students with ESL 138 minimum grade "C" and concurrent enrollment in ESL 161
Corequisites: ENG 000
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students focus on strengthening the academic writing skills needed for American college courses. Emphasis will be on developing ideas in paragraphs and essays. Students will engage in rigorous study of academic vocabulary needed for college-level writing. Students must also enroll in ENG 000. Successful completion of this course with a minimum grade of "C" will raise students' Academic Writing level to 6.

Environmental Science ENV

ENV 101 Environmental Science I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This introductory science course will cover the physical processes that affect the environment, the impact of people on the environment and the physical resources in our environment. It will also explore the causes, consequences and possible solutions to both local and global environmental issues. Emphasis will be placed on a holistic approach to environmental science, using laboratory exercises, class discussions and projects to reinforce scientific principles.

ENV 105 Introduction to Environment and Society 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides an in-depth look at the relationships between individuals, societies and the environment from the perspectives of science, humanities and social science disciplines. Local to global environmental issues and topics will be presented and analyzed through a combination of lecture, readings, classroom discussions and activities.

ENV 174 ENV Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience.

ENV 201 Environmental Science II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4; ENV 101 minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course offers an in-depth, interdisciplinary approach to the understanding of the environment and environmental issues. These problems and their solutions will be studied from a scientific, as well as a social scientific, perspective. The course features a capstone project where students will work on environmental issues.

Facility Management FMA

FMA 130 Introduction to Facility and Energy Management 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will be introduced to the roles and responsibilities of Facility and Energy Management. In a living lab atmosphere, students will be given real life scenarios to troubleshoot actual building, energy and profitable solutions.

FMA 150 Energy Management Principles 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; FMA 130 minimum grade "C"
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to principles for energy management of light industrial, commercial and multifamily structures. Real world applications are highlighted, including understanding utility usages and costs, identifying and qualifying energy saving opportunities and determining return on investments.

FMA 170 Building Sustainability LEED 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this leadership in energy and environmental design course, students will receive a complete review of the LEED rating systems and strategies for building sustainability. Understanding of the building process and how LEED is verified throughout the design, construction and commissioning of a structure using the USGBC project checklists and documentation of commercial buildings. Through this course, students will be prepared to take one or more of the LEED accredited professional exams.

FMA 190 Introduction to Mechanical, Plumbing and Electrical 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; FMA 150 minimum grade "C"
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the mechanical, electrical and plumbing systems used in light industrial, commercial and multi-family buildings. Issues of history, ideology and sustainability will be discussed as it pertains to the management of facilities with mixed systems and the way these systems interact with building design.

Fluid Power FLP

FLP 101 Fluid Power Fundamentals - I 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This is an introductory class covering the fundamental principles of fluid power, both hydraulics and pneumatics. Subject matter includes application of Pascal's Law, prime mover requirements, principle of operation of fluid power fixed displacement pumps and compressors, control valves and actuators. Component failure modes and troubleshooting concepts are also covered. This course contains material previously taught in FLP 111. FLP 101 is generally offered in the first 7 1/2 week session.

FLP 110 Fluid Power Fundamentals - II 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; FLP 101 minimum grade "C", may enroll concurrently
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This class builds on the foundation set in FLP 101 with coverage of variable displacement pumps, proper system contamination control and filtration, hydraulic fluid requirements and compatibility, solenoid valves, load control valves, speed controls, fluid power motors and pressure intensifiers. Hands-on exercises include building of fluid power circuits and disassembly/inspection of hydraulic components. This course contains material previously taught in FLP 111. FLP 110 is generally offered in the second 7 1/2 week session.

FLP 174 FLP Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience.

FLP 214 Hydraulic Circuits and Controls 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; FLP 101 and FLP 110, minimum grade "C-"
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This course further develops the concepts of directional, pressure and flow controls covered in FLP 101 and FLP 110. Troubleshooting and reading of hydraulic blueprints is emphasized. Circuits will include conventional valving, modular sandwich, screw in and slip in cartridge valves. An introduction to proportional valves, servo valves and electrical ladder control diagrams is included. Lab exercises play an important role in this class. This course contains material previously taught in FLP 213.

FLP 225 Fluid Power Motion Control 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; FLP 214
30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours

This course reviews basic electrical principles and covers amplifier theory as applied to open loop and closed loop control. Proportional directional valves, flow control valves and pressure control valves are discussed along with hydraulic servo valves. Proper setup alignment of the drive amplifiers and troubleshooting of servo and proportional control systems are covered in class and laboratory sessions. Closed loop (PID) control theory and feedback transducers are also discussed.

FLP 226 Pneumatics 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; FLP 101 and FLP 110, minimum grade "C-"

30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course covers operation and practical use of compressors, air distribution systems, actuators, directional valves and other controls used in automation. The second half of the course concentrates on the design of pneumatic control and power circuits using ANSI and ISO symbols and also the Moving Part Logic technique (pneumatic ladder logic).

FLP 274 FLP Co-op Education II 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; FLP 174; consent required

0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses.

French FRN

FRN 101 Beginning Conversational French I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students acquire practical early-elementary conversational skills. They develop the ability to understand and speak everyday conversational French within the context of French-speaking cultures and through introduction of vocabulary, basic grammatical structures and idioms. Listening activities and some reading/writing activities will be included. Students are expected to spend considerable time outside of class practicing with materials provided. This course contains material previously taught in FRN 109.

FRN 109 Beginning Conversational French 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

Conversational in approach, this course assumes no prior knowledge of the language. Students will practice the fundamentals of spoken and written French and enhance their appreciation of French Civilization and the culture(s) of the French-speaking countries. Note: This course does not fulfill four-year college language requirements. This course was previously FRN 120.

FRN 110 Intermediate Conversational French 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; FRN 109 or one semester of college French

30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course emphasizes the use of spoken French in everyday context. Students work on improving aural/oral skills. By semester's end students should feel comfortable creating with language in the present, past and future tenses. This course does not satisfy four-year college language requirements. This course was previously FRN 121.

FRN 111 First Year French I — 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This is a beginning and transferable course in French which emphasizes communicative approach. Class work and aural/oral practice sessions assist the student in progressing effectively in the four language skills of listening, speaking, reading and writing. Cultural aspects of the French-speaking world are also highlighted.

FRN 122 First Year French II — 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; FRN 111
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This is a continuation of FRN 111. Continuing classroom work and aural/oral practice sessions help the student to acquire basic conversational tools of the language as well as basic informational aspects of the culture.

Geography — GEO

GEO 101 World Regional Geography — 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is an introductory course in World Regional Geography which is divided into two parts. In the first portion of the class, students become familiar with the basic principles and concepts of physical and cultural geography which they will employ during the remainder of the semester. In the second part of the class, students survey the world on a region-by-region basis, identifying the specific geographic characteristics such as climate, terrain, population, industry and manufacturing, trade, transportation, and agriculture, which give the individual regions their unique identity.

Geology — GLG

GLG 100 Introduction to Earth Science — 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course provides a basic understanding of the major branches of earth science, including geology, hydrology and meteorology. It is designed to develop an awareness and appreciation for these geosystems and their important interrelationships, as well as an understanding of the scientific approach to problem-solving. This course will include an overview of both local and global environmental problems as well as a discussion of possible solutions.

GLG 103 Field Geology — 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students examine the processes that have formed and are forming the landscape by studying formations at local sites. Emphasis is placed on environmental impact on the landscape and waters of Washtenaw County. Traditional classroom lectures will be supplemented with field experiences to explore topics learned in class.

GLG 104 Weather 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is an introductory study of the atmosphere which includes both weather and climate. This course introduces the student to basic concepts involved in the analysis of weather phenomena and atmospheric processes on a global and local scale. Fundamental weather principles will be examined, such as: solar radiation, temperature, moisture, pressure, winds, and weather systems. Current weather data is delivered via the internet, which is coordinated with learning activities. Broad aspects of climates, local microclimatology and climate change will also be integrated.

GLG 110 Geology of the National Parks and Monuments 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

The geological settings of specific national parks and monuments are studied including the principles and processes which shaped them. Slide programs and topographical maps are used to illustrate geological features.

GLG 114 Physical Geology 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

Students examine the physical features and processes that have formed and are forming the landscape of the Earth. Emphasis is placed on learning the local geology of Michigan and the Great Lakes. Topics will include: topographic maps, minerals, rocks, soil erosion and formation, plate tectonics, earthquakes, volcanoes, mountain building, geologic time and dating, running water, lakes, groundwater, oceans and glaciation.

GLG 202 Earth Science for Elementary Teachers 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course utilizes laboratory activities, lecture and projects to present the content and methodology necessary for success in teaching Earth science in the elementary classroom. Various geology topics will be covered such as the geosphere, hydrosphere, atmosphere, environmental issues and space. Teaching methodology includes developing a portfolio of activity plans, presenting an activity from those plans and creating a bulletin board pertaining to an Earth science concept. This course is intended for early childhood and elementary education students only.

GLG 276 Principles of Geographic Information Systems 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the basic principles and techniques of map creation and manipulation using Geographic Information Systems (GIS). Students will use ArcGIS to focus on various ways to classify, represent and visualize the Earth's surface. Upon completion of this course, students will have an understanding of basic GIS and develop fundamental skills to integrate data, draw maps, visualize trends and interpret findings.

German GRM

GRM 101 Beginning Conversational German I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students acquire elementary conversational skills and develop the ability to understand, speak, react, and reflect using everyday conversational German. Through the introduction of vocabulary, grammatical structures, idioms, and real-life dramatization, the students practice these skills. Listening activities and some reading/writing activities will be included. Students are expected to spend considerable time outside of class practicing with materials provided. This course contains material previously taught in GRM 109.

GRM 102 Beginning Conversational German II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; GRM 101 or one semester of college German
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students acquire higher-level elementary conversational skills and develop the ability to understand, speak, react, and reflect using everyday conversational German. Through the introduction of vocabulary, grammatical structures, idioms, and real-life dramatization, the students will practice these skills. Students are expected to spend considerable time outside of class practicing with materials provided. This course contains material previously taught in GRM 110.

GRM 111 First Year German I 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This is a beginning and transferable course in German which emphasizes the aural-oral approach. Classroom work and aural/oral practice sessions assist the student in establishing and perfecting basic conversational tools in the language. Students intending to study German should have a sound, basic background in English grammar and syntax to be able to take and succeed in a foreign language as inflected and analytical as German.

GRM 122 First Year German II 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; GRM 111
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This is a continuation of GRM 111. Continuing classroom work and aural/oral practice sessions emphasize the communicative approach. Class conversations, short readings, and pattern practice also assist students in acquiring facility in the language, as well as informational aspects of the culture. Students who have experience equivalent to GRM 111 may contact the instructor for permission to waive the prerequisite.

Graphic Design Technology GDT

GDT 100 Typography I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 104 minimum grade "C" or (GDT 106 and GDT 107, minimum grade "C")
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This is an introduction to the evolution/principles of typography concentrating on typographic form and classification, type as form/image, display type, text type, typographic relationships, readability/legibility, grid systems, fundamental design principles and page layout. Assignments investigate typography as an element of design whose form and purpose is to achieve successful, informative and expressive visual communication. Students must be proficient with desktop/personal computers.

GDT 101 History of Graphic Design 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course presents the history of Graphic Design from the Victorian Era to the present, focusing primarily on European and American major design movements and pioneering graphic designers/artists. Lectures refer to the social and political climates, the relationship of the applied arts to the fine arts, and technological innovations from the time of Gutenberg's movable type printing press through digital printing and media.

GDT 104 Introduction to Graphic Design 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This course is an introduction to graphic design principles, methods and techniques that are used to incorporate type and image in to visual communication. Students complete practical design projects that examine the interaction of medium and message using industry-standard page layout, illustration and image editing software.

GDT 106 Illustrator Graphics 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 30 other, 60 total contact hours

This course covers the fundamental tools and techniques for the vector drawing software Adobe Illustrator. Lectures, demonstrations, exercises, and publication projects prepare students for basic software proficiency in the current version of the software. Students enrolling in this course should be proficient in the use of desktop/personal computers. Students enrolling in GDT computer-based courses should be proficient in basic desktop computer operations. This course contains material previously taught in GDT 139.

GDT 107 InDesign 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 30 other, 60 total contact hours

This course covers the fundamental tools and techniques for the page layout software, Adobe InDesign. Students will use InDesign to create page layouts for both screen and print media. Students will learn how to apply typographic tools, design to a grid, apply color and generate and apply graphic elements to publications. Students will gain basic software proficiency in the current version of the software. Students enrolling in GDT computer-based courses should be proficient in basic desktop computer operations. This course contains material previously taught in GDT 130.

GDT 108 Photoshop Graphics 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
30 lecture, 0 lab, 0 clinical, 30 other, 60 total contact hours

This course covers the primary features and uses of Adobe Photoshop image-editing software. Lectures, demonstrations, exercises and imaging projects introduce students to basic software tools and techniques for image correction, enhancement, compositing, and new image creation for both print and on-screen use. Students enrolling in GDT computer-based courses should be proficient in basic desktop computer operations. This course contains material previously taught in GDT 140.

GDT 112 Principles and Problem-Solving in Graphic Design 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 104 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

In this course, students explore intermediate graphic design principles and visual communication theories. Students produce dynamic visual compositions, addressing matters of cognition, aesthetics, symbols, ideation and ethics with emphasis on creative expression and inventiveness. The title of this course was previously Graphic Communication I.

GDT 151 Screen Printing 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 106 and GDT 108, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This course introduces students to screen-printing techniques and methods. The class will be an integration of graphic design theory, computer technology and hands-on printing. Students will produce dynamic visual compositions from the initial concept to the final printed piece. Assignments will focus on the use of screen-printing in contemporary graphic design and real world products. Students with professional experience with Illustrator and Photoshop may contact the instructor for permission to waive the prerequisites.

GDT 174 GDT Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

Students are placed in approved industrial work experience to gain skills and knowledge offered by the employer. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience.

GDT 215 Typography II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 100

60 lecture, 0 lab, 0 clinical, 30 other, 90 total contact hours

In this course, students will deepen their knowledge of typography by exploring advanced typography concepts such as grid systems; complex hierarchy; refinement of text and display type; typography for screen-based media such as web, film, and television; experimental typography; by using type to communicate the message effectively. Students with experience equivalent to GDT 100 may contact the instructor for permission to waive the prerequisite.

GDT 220 Publication Design 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 100 and GDT 112, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This is a graphic design digital studio course that focuses on layout and design of publications. Students continue development of skills in the application of design and typographic principles and practices, and produce a variety of single and multiple-page publications for print and electronic devices.

GDT 239 Imaging and Illustration 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 104 minimum grade "C+" and GDT 112
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

In this course, the student develops skills with advanced digital tools, methodologies and concepts for communicating visual solutions with real world relevance. A variety of projects may include information graphics, rendering, editorial and interpretive illustration, spot illustration and promotional illustration.

GDT 245 Digital Painting 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 108 and GDT 112, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This course covers advanced skills in computer-based drawing and painting. Students integrate traditional and computer sketch development with industry-standard software tools and techniques to create artwork for commercial uses such as editorial, advertising, portraiture, character design and animation. Coursework explores gesture, line, form, perspective, color, shading, composition and development of personal style.

GDT 252 Advanced Digital Studio 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 220 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This course offers advanced techniques and applications in computer-based imaging and publication design. Topics include design, illustration and electronic file preparation for offset printing involving integration of several professional graphics software programs. Advanced techniques in software such as Adobe PhotoShop, Adobe Illustrator and InDesign emphasize creative, real-world applications for graphic design production. Students who have equivalent experience may contact the instructor for permission to waive the prerequisite.

GDT 274 GDT Co-op Education II 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain further skills from continued experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience.

GDT 290 Professional Practices 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; 48 credits in Graphic Design program; consent required
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This class prepares students for seeking employment in graphic design and illustration. Topics covered include graphic design and illustration career options/specialties, job hunting skills/techniques, freelancing, resume preparation, portfolio preparation and includes professional review of student portfolios. This course should be taken during the final semester prior to graduation. This course was previously GDT 230.

Health Science HSC

HSC 100 Basic Nursing Assistant Skills 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 3
45 lecture, 30 lab, 25 clinical, 0 other, 100 total contact hours

This state approved 100 hour program prepares students for employment in a variety of health care settings from nursing homes, hospitals or home health care agencies where they will work as a nursing assistant. After the class is successfully completed, the student will be eligible to take the state clinical and knowledge tests for certification. Certification is required for employment as a nursing assistant in long-term care facilities.

HSC 101 Healthcare Terminology 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, healthcare professionals are introduced to terminology used in the workplace. Medical terms pertaining to anatomy, clinical concepts, disease, diagnosis, treatment, surgery, drugs, and medical procedures are emphasized. This course is not required for the Medical Billing and Coding (CTMBC) program. It is required for the Nursing and Allied Health Programs (Dental Assisting, Medical Assistant, Pharmacy Technology, Physical Therapist Assistant, Surgical Technology, and Radiography).

HSC 115 Clinical Procedures for Administrative Medical Assistants 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; HSC 101 or HIT 101 or HSC 124, minimum grade "C"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students will be introduced to clinical aspects of the role of the Administrative Medical Assistant in a healthcare office setting. Emphasis is on the clinical and lab procedures that are performed in offices. Students will focus on fundamental clinical and general patient care procedures, including how to recognize and respond to office emergencies. The title of this course was previously Medical Office and Laboratory Procedures.

HSC 124 Medical Terminology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are presented with a comprehensive study of the origins and basics of medical terminology. Prefixes, suffixes, word roots, combining forms, special endings, plural forms, abbreviations, symbols, organization of the human body, the definition of useful diagnostic and procedural terminology are included in the content. This course was designed for use by the Health Information Technology programs (such as Medical Billing and Coding) and is not required for the Nursing and Allied Health Programs (Dental Assisting, Medical Assistant, Pharmacy Technology, Physical Therapist Assistant, Surgical Technology, and Radiography).

HSC 131 CPR/AED for the Professional Rescuer and First Aid 1 credit

Level I Prerequisites: No Basic Skills
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This American Red Cross CPR/AED first aid training program prepares students to respond to injuries and sudden illness. This course provides students with the knowledge and skills necessary to prevent, recognize and provide basic care for injuries and sudden illness. The course includes adult CPR/AED, child and infant CPR and first aid.

HSC 131B CPR/AED for the Professional Rescuer - Review .5 credit

Level I Prerequisites: No Basic Skills
7.5 lecture, 0 lab, 0 clinical, 0 other, 7.5 total contact hours

This American Red Cross CPR/AED is a training program to prepare students to respond to sudden illness. This course provides students with the knowledge and skills necessary to prevent, recognize, and provide basic care for sudden illness. The course includes adult CPR/AED and child and infant CPR.

HSC 138 General and Therapeutic Nutrition 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course presents normal nutrition and its relationship to health. It includes a study of the nutrients and nutrition planning guides. Nutritional needs throughout the lifecycle are studied. Concepts of general nutrition are applied to various diet therapies prescribed from common disease states in clinical practice. This course contains material previously taught in HSC 118 and HSC 128.

HSC 147 Growth and Development 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ENG 107 or ENG 111, minimum grade "C", may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers physical, cognitive and psychosocial changes of individuals from birth until death. The role of the family and theories of death and mourning also are included. This course meets the nursing program requirements and is also open to the general population.

Heating, Ventilation, and Air HVA

HVA 101 Heating, Ventilation and Air Conditioning I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
75 lecture, 15 lab, 0 clinical, 0 other, 90 total contact hours

This course introduces the concept of thermodynamics and principles of refrigeration. Major units covered include HVAC mathematics, refrigeration systems, refrigerants, refrigerant tables, contaminants, dryers, moisture in the air, refrigeration components (i.e. compressors, condensers, evaporators, metering device motors and accessories) and defrost systems. The components and operation of residential furnaces will be discussed. An overview of heating and A/C systems and components will be provided from an operation and service perspective.

HVA 102 HVAC Sheet Metal Fabrication 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students receive an introduction to layout, design and fabrication of sheet metal with an emphasis on residential HVAC applications. Topics will include safety, sheet metal tools and equipment, fabricating HVAC duct using patterns and drawings, and installation techniques, standards and good practices. This course was previously TRI 103.

HVA 103 Heating, Ventilation and Air Conditioning II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
60 lecture, 30 lab, 0 clinical, 0 other, 90 total contact hours

This course covers basic electrical theory as applied to heating, ventilation, air conditioning and refrigeration systems. Students solve electrical problems, construct and troubleshoot series-parallel circuits, identify and troubleshoot electrical components, apply alternating current principles, identify, test and troubleshoot motors and motor control circuits, and interpret electrical diagrams and use them to troubleshoot HVACR systems.

HVA 105 Residential and Light Commercial Heating Systems 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2 or MTH 067 may enroll concurrently; HVA 101 and HVA 103, minimum grade "C"; HVA 101 may enroll concurrently
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students build on the heating system skills and knowledge learned in prerequisite courses. Major units covered include HVAC mathematics, service and preventative maintenance for residential electric, gas, oil or hydronic and heat pump systems. Students get an overview of indoor air quality, air distribution and installation concepts and techniques. The title of this course was previously Heating, Ventilation and Air Conditioning III.

HVA 107 Residential and Light Commercial Air Conditioning Systems 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; HVA 101 and HVA 103, minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students review basic electrical and refrigeration principles needed for maintaining and troubleshooting equipment. Sequence of operational, mechanical and electrical failures are covered for residential and light commercial equipment. This includes logical diagnostic techniques which are simulated on both computer simulators and live lab equipment. The title of this course was previously Heating, Ventilation and Air Conditioning IV.

HVA 108 Residential HVAC Competency Exams and Codes 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; HVA 105 and HVA 107, minimum grade "C"
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will learn the relevant codes to residential heating, ventilation and air conditioning. Other topics include residential air conditioning requirements, proper operating conditions and servicing requirements. Students will take a nationally recognized competency exam upon completion of the course.

HVA 201 Energy Audits 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HVA 101 and HVA 103, minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course prepares students to conduct an energy audit on residential, commercial and industrial structures and HVAC systems. Students gain an understanding of the current energy, building, and HVAC standards put out by organizations such as ASHRAE, and the U.S. Green Building Council's "LEED" program. Students will also be introduced to topics such as commissioning, ducts loss, building air infiltration, heat recovery, thermal storage and energy waste elimination.

HVA 202 Air System Layout and Design 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HVA 101 and HVA 103, minimum grade "C"
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

This course provides an overview of duct systems, airflow, design and analysis of indoor air quality issues. This includes components of air distribution systems, fan principles and sizing, noise troubleshooting and system pressure losses.

HVA 203 Refrigeration Systems 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HVA 108 minimum grade "C"
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

This course covers commercial refrigeration systems. This includes system operation, installation, maintenance and troubleshooting. Topics covered include: types of commercial refrigeration systems, evaporators, compressors, condensers, expansion devices, defrost, controls and cold storage principles.

HVA 205 Hydronic Systems 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HVA 108 minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course covers an overview of hydronics which includes steam and hot water boilers. Major components are identified; safety and control systems are analyzed and inspected. Flow characteristics are examined for proper calculation of piping and radiator sizes. Electrical wiring of zoning systems is emphasized and practiced.

HVA 207 Commercial Industry Standards with Competency Exams 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; HVA 203 and HVA 205, minimum grade "C"
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will learn the relevant codes to commercial heating, ventilation, air conditioning and refrigeration systems. Other topics include commercial air conditioning and refrigeration installation requirements, proper operating conditions and servicing requirements. Students will take nationally recognized competency exams.

HVA 220 Managing Chiller Energy Usage 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HVA 101 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, the operation and principles of electric chillers will be discussed and examined. Chiller pumps, pump flow rates, tower controls and cooling tower operation will be analyzed for the most efficient operation. Proper maintenance required for optimum energy usage will be investigated.

HVA 225 Managing Absorption Cooling Energy Usage 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HVA 101 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, overall operation of equipment and operating principles will be discussed in depth. Equipment setup, to maintain maximum efficiency, will be evaluated. Absorption pumps, controls, tower pumps and tower controls will be explained. Proper maintenance for all parts of the absorption will be evaluated to maintain or improve efficiency.

HVA 230 Commercial Boiler Efficiency 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HVA 101 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, the complete boiler heating system will be reviewed and analyzed to operate at maximum efficiency. Boiler operation, controls, pumps, motors, steam traps, and combustion efficiency will be discussed. Correct maintenance to maintain maximum equipment operation will be discussed. Changes and alterations to existing equipment to maintain or improve maximum efficiency will be analyzed.

HVA 235 Building Automation 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HVA 101 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will learn how to maximize comfort for occupants while minimizing energy usage. Students will be introduced to direct digital controls with programs to monitor and control the environmental conditions of a building. Temperature sensors, valves and actuators, pressure sensors, current sensors and transducers will be discussed and explained.

History HST

HST 108 The Ancient and Medieval World 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this introductory survey course, students will examine the history of world civilizations (Africa, Asia, Europe, and the Americas) from ancient times to 1500. The course will emphasize the diversity of world cultures, while also highlighting how the various societies of the world were interconnected. Students will investigate the essential social, cultural, political, economic and religious developments around the globe, and cover fascinating topics such as the Egyptian Pyramids, the Trojan War, Alexander the Great, Hinduism, Buddhism, the Great Wall of China, Terra-Cotta Warriors, the Roman Empire, Vikings, Samurai Warriors, Islam, Christianity, the Crusades, the Aztecs, and the Renaissance.

HST 109 The Early Modern World 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this introductory survey course, students will examine the history of world civilizations (Africa, Asia, Europe, and the Americas) from 1500 to 1900. The course will emphasize the diversity of world cultures, while also highlighting how the various societies of the world were interconnected. Students will investigate the essential social, cultural, political, economic and religious developments around the globe, and cover fascinating topics such as the Reformation, the Ming Dynasty, the Aztecs and Incas, the Ottoman Empire, the Scientific Revolution, the Enlightenment, the French Revolution, the Atlantic Slave Trade, Simon Bolivar and Latin American Independence, the Industrial Revolution, the Meiji Restoration, the Scramble for Africa, the Opium War, the Boxer Rebellion and the Women's Rights Movement.

HST 121 Ancient and Medieval Europe 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this introductory survey course, students will examine the history of Europe and the Mediterranean during ancient and medieval times. They will investigate the essential social, cultural, political, economic and religious developments of the period, and cover fascinating topics such as the Trojan War, the Spartans, Alexander the Great, Spartacus, Julius Caesar, the Roman Empire, Constantine, the Huns, the Goths, St. Patrick, Charlemagne, the Vikings, the Crusades, Richard the Lionheart, Magna Carta, the Black Death and the Renaissance. The title of this course was previously Western Civilization I.

HST 122 Early Modern Europe 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this introductory survey course, students will examine European history from the sixteenth through the nineteenth century. They will investigate the essential social, cultural, political, economic and religious developments of the period, and cover fascinating topics such as the Reformation, Henry VIII, Mary Queen of Scots, Christopher Columbus, Queen Elizabeth I, Oliver Cromwell, the Scientific Revolution, the Enlightenment, Adam Smith, the French Revolution, Napoleon, the Industrial Revolution, Karl Marx, Charles Darwin and the Women's Rights Movement. The title of this course was previously Western Civilization II.

HST 123 The Twentieth Century 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will examine the essential social, cultural, political and economic developments of the twentieth-century world, paying particular attention to the role of the United States in that world.

HST 150 African American History 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to the ways in which African Americans have contributed to American history and culture by examining the significant cultural, social, political, economic and religious developments from 1619 to the present. While focusing on events in America, the course will also address important historical events in Africa that connect with African Americans.

HST 200 Michigan History 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The Michigan History course is a review and analysis of the social, economic and political history of the State of Michigan. Within the purview of the course is the study of the full extent of human experience, from contact with the indigenous peoples, through the arrival and implantation of European culture. The significant historical periods covered are Colonization, Territorial Years, Development from 1836 to 1861, Civil War and Post-War Development, the Progressive Era, World War I, the Great Depression, World War II and Post-War developments. This course can fulfill the Michigan history requirement for Teacher Certification in Social Studies (RX).

HST 201 United States History to 1877 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course traces the development of the United States from its earliest beginnings up through the cataclysm of the Civil War and the subsequent Reconstruction Era. The approach is largely chronological, stressing cause and effect relationships, the roles played by prominent people, and the ways in which the events of the past have shaped contemporary society and its institutions.

HST 202 United States History Since 1877 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course traces the development of the United States from the end of the Reconstruction Era through the late 20th century. The approach is largely chronological, stressing cause and effect relationships, the roles played by prominent people, and the ways in which the events of the past have shaped contemporary society and its institutions.

HST 210 U.S. Women's History 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course examines the political, economic, social and cultural contributions of women to the development of the United States, as well as the changing role of women in the formation of the nation's identity. The course also considers the ways in which race and ethnicity shape the differing experiences of women in American society.

HST 215 History of U.S. Foreign Relations 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course traces the history of U.S. foreign policy from the Revolutionary era to the present. It will address the relationship between the American economic, social, and political systems and the conduct of the nation's foreign policy. The role played by race, economics, ideology, and "national interest" will be assessed. Emphasis will be placed on the conduct of diplomacy immediately before, during, and after periods of military conflict. The conduct of the Cold War will be reviewed in detail.

HST 216 U.S. Military History, Colonial Times to Present 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course traces the American military from its pre-colonial origins to the present. It will address the relationship between the American economic, social, and political systems and the nation's military, as well as the impact of the nation's geography on the military's organization and mission. Key conflicts will receive detailed attention in an effort to discern if there is a unique "American Way of War."

HST 220 The Civil War Era, 1845 - 1877 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course deals with the causes, conduct and impact of the American Civil War. It focuses on the political, social, economic, and racial background to the conflict, the conduct battles and campaigns, the formulation of strategy, the mobilization of the nations' societies and economies, wartime diplomacy and politics and the numerous issues surrounding Reconstruction. The course will assess the impact of the war on the nation's society, political system, and economy.

HST 225 World War II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will explore the causes, conduct, and consequences of the Second World War. It will begin by addressing the settlement that ended the Great War, the rise of fascism in Europe and militarism in Japan, and interwar military developments. The course will then trace the events that led to war in Asia and in Europe. The course's centerpiece will be a consideration of the war's conduct. Military issues, both tactical and strategic, will be addressed, as will the economic, diplomatic, and political forces that shaped the conflict. The course will conclude with a consideration of the troubled peace that followed, focusing on the events that led to the outbreak of the Cold War.

HST 230 History of the Holocaust 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course investigates the origins, development and legacies of the Nazi onslaught against the European Jews from 1933 to 1945.

HST 235 African History 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The African History course is a survey of the development of African society, its culture and institutions, with emphasis on the 13th century to the present. It will address the effects of Christianity, Islam, the slave trade and colonialism on the African continent. Emphasis will also be placed on the process of decolonization and industrialization of modern Africa.

HST 240 The History of the Modern Middle East, 1798 - Present 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides an introduction to the history of the modern Middle East from the end of the eighteenth century to the present, focusing on the territories of the Ottoman Empire and its successor states. Major topics and themes will include Ottoman and Islamic institutions, the decline of the Ottoman and Persian empires and the rising influence of European powers, the emergence of Arab nationalism, the origins and development of the Arab-Israeli conflict, the emergence of radical Islamic movements and contemporary events.

HST 251 War in the Modern World, 1500 - Present 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course deals with war and military institutions in Europe and North America since the beginnings of modern states (about 1500), while placing particular emphasis on the more recent period, from just before the American and French Revolutions to the present time. Its focus is on the interaction of warfare - a changing set of techniques and technologies - with the broader political, social, economic and intellectual aspects of war as well as with the aftermath of war. Some attention is given to particular military campaigns and battles, but mainly to make clear the technical aspects of war and to illustrate important trends and patterns. The approach of the course is comparative, between the differing histories of nation-states, and between the divergent military experiences of Europe and North America. While touching on the global experience of war during the last four centuries, the course aims to explain the central role played by war in the history of the modern Western world.

HST 255 Making the Modern World 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students examine the most significant global events of the past two centuries. While lectures present background and contextual information and regional case studies transport the student around the globe (from Europe to Africa, Asia and the Americas), the focus of the course is the discussion of assigned books on each of the major events covered in class.

HST 260 History of England to 1688 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this introductory survey course, students will examine the history of England (as well as Ireland, Scotland and Wales) from ancient times to the early modern period. They will investigate the essential social, cultural, political, economic and religious developments of the British Isles during this period, and cover fascinating topics such as the Celts, the Druids, the Anglo-Saxons, Alfred the Great, the Vikings, William the Conqueror, the Battle of Hastings, Richard the Lionheart, Magna Carta, Parliament, the Hundred Years' War, the Wars of the Roses, Henry VIII, the Reformation, Elizabeth I, Mary Queen of Scots, the English Civil War and Oliver Cromwell.

HST 270 Modern China 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students receive an introduction to the political, economic, social, and cultural history of modern China. After placing China in global history and examining the decline of Imperial China, the emergence of modern China is examined in detail. The title of this course was previously History of China.

Human Services Worker HSW

HSW100 Introduction to Human Services 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to basic human services. It includes discussions of major target populations, the major helping professions, the social context and the history of helping, roles performed by professional helpers, intervention skills, values and ethical and legal considerations. Students are challenged through group discussions to determine whether the field is suitable for them and whether their values are congruent with values espoused by human service professions.

HSW174 HSW Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, human service-related position. Together with the instructor, the employer, and the co-op placement office, students determine work assignments and learning objectives to connect classroom learning with career-related work experience.

HSW200 Interviewing and Assessment 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HSW 100 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to basic interviewing skills used in helping professions, as well as the process of individual needs assessment. Students will learn both attending and influencing skills. In addition, they will learn how to write goals, objectives and program notes in the context of a client intervention strategy.

HSW220 Group Dynamics and Counseling 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HSW 100 or SOC 100, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to using small groups to promote change. Group dynamics and developmental theory are studied in depth. Concepts such as norms, conformity, cohesion and patterns of interaction are covered. Problems such as scapegoating and triangulation are analyzed. The following competencies are taught: screening candidates, composing the group, attending to thoughts and feelings, linking, observing group process, using activities and exercises, and ethical group practice.

HSW225 Family Social Work 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HSW 100 or SOC 100, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces students to the theory and practice of social work with families. Students will learn how to describe American families as social systems, how to describe the structure of a family and how to identify common patterns in family functioning. Common problems and special circumstances in family functioning will be addressed. Students will learn to identify effective ways to engage families. Basic social work interventions with families will be described.

HSW229 Human Services Success Skills 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; HSW 100, HSW 200 and SOC 220 or HSW 220; minimum grade "C" all HSW and SOC requirements; HSW 200 and SOC 220 or HSW 220 may enroll concurrently
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, students review and evaluate necessary skills that will be utilized in human services employment settings. Topics covered will include ethics, data collection, professional behavior, documentation, employment opportunities and several other areas of professional concern.

HSW230 Field Internship and Seminar I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HSW 100, HSW 200 and SOC 220, minimum grade "C"; consent required; students must secure placement and submit required paperwork to be considered for permission to enroll

15 lecture, 0 lab, 0 clinical, 180 other, 195 total contact hours

This course integrates students into the working world by having them complete field work in human service agencies. The students have an opportunity for a variety of experiences based on their placement. The field work will be integrated with course work during a one hour seminar. Learning objectives will be individualized according to the field internship and career goals of each student. Instructor approval for enrollment in this course will be based on previous course completion, documented acceptance to HSW program, exhibiting behaviors as described in the HSW student handbook and a secured placement.

HSW296 Neuropsychology of Addiction 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students explore the relationship between the physiological makeup of the body and its impact on the addictive nature of drugs and alcohol. By the end of this course, students will have a strong understanding of how neurotransmitters and the chemical makeup of the brain are influenced by drugs. Students explore the role that stimulants, depressants, and hallucinogenics play in altering brain chemistry, the impact of withdrawal, and the basic concepts of detoxing. In addition, students will be introduced to different classifications of prescription medications used in treating mental illness.

HSW297 Assessment of Co-occurring Disorders 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students receive an overview of tools used to assess the co-occurrence of mental illness and substance abuse. Students are introduced to basic mental illness concepts presented in the current Diagnostic and Statistical Manual (DSM) and explore the influence and interaction of substance abuse related to mental illness. In addition, students will be provided with ethical guidelines related to working with assessing and treating addiction.

HSW298 Treatment of Addiction 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HSW 296 and HSW 297, minimum grade "C"; may enroll concurrently in both courses

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this capstone course, students will integrate theory into the practice of treating addictions. Students will apply the theoretical foundations to treating addiction and learn about possible barriers associated with treatment. By the end of this course, students should have a basic understanding of treatment options and begin to demonstrate the skills used with each option.

Humanities HUM

HUM101 Introduction to the Humanities - Ancient to Medieval 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

Level II Prerequisites: Computer Literacy

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces students to various cultures and cultural periods from the dawn of human creativity through the Middle Ages. It explores the creative disciplines of human artistic output focusing on the Cradles of Civilization and the Western World. This course may be presented in chronological or topical format. Classes will cover a minimum of 5 cultures through various interdisciplinary media. Cultures: Prehistory, Mesopotamia, Egypt, Aegean, Greece, Rome, Middle Ages. Media: History, Visual Arts, Architecture, Literature, Philosophy, Music, and Religion. This course was previously Humanities I - Ancient to Medieval Times.

HUM 102 Introduction to the Humanities - Renaissance to Modern 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: Computer Literacy
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces students to various cultural periods from 1250 through the early 20th Century. The creative disciplines of human artistic output are explored, focusing on the Western World. This course can be presented in chronological or topical format. Classes will cover a minimum of 5 cultures through various interdisciplinary media. Periods: Renaissance, Mannerism, Baroque, 18th Century (Rococo, Neoclassicism, Romanticism, Realism), 19th Century (Academic Art, Impressionism) and 20th Century up to WWII. Media: History, Visual Arts, Architecture, Literature, Philosophy, Music and Religion. This course was previously Humanities II - Renaissance to Modern Times.

HUM 103 Introduction to the Humanities - 20th Century to Present 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: Computer Literacy
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces students to various artistic periods and movements from the early 20th Century to the Present. The creative disciplines of human artistic output are explored, focusing on the Western World. This course can be presented in chronological or topical format. Classes will cover a minimum of 8 movements through various interdisciplinary media. Movements (selection): Dada, Surrealism, Cubism, Fauvism, Expressionism, Abstract Expressionism, Pop Art, Minimalism, Realism, Harlem Renaissance, Conceptual Art, Post-Modern, etc. Media: History, Visual Arts (including Photography and Film), Architecture, Literature, Philosophy, Music and Religion. The title of this course was previously Introduction to Humanities - 20th Century.

HUM 120 Introduction to Film 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a study of motion pictures from a variety of eras and cultures. Instruction will cover various elements of the creative process involved in film making including the following: narrative, acting, mise-en-scene, editing, cinematography and sound. Students will develop the skills necessary to critically and technically evaluate one of the most dynamic and influential art forms of the past 100 years.

HUM 145 Comparative Religions 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will introduce, examine, and compare the central beliefs, concepts, practices, texts, and histories of a variety of the world's major religious traditions. This course will cover Hinduism, Buddhism, Judaism, Christianity, and Islam. One or more of the following other religions may be covered as well: Indigenous Sacred Ways, Daoism, Confucianism, Shinto, or Sikhism.

HUM 146 Mythology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: Computer Literacy
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to myths from around the world, and explore mythological themes and the relationship between culture and myths. Course content touches on other disciplines including psychology, sciences, arts and literature. This course can be structured according to cultures, core themes or archetypes. Classes will cover at least 5-6 different cultures and a variety of core themes. Cultures: Greek, Roman, Celtic, Norse, Native American, Arctic, Asia, Americas, Africa, Middle East. Core themes (selection): Creation, Gods and Goddesses, Heroes, Demons, Animals, Underworld, Quests, Afterlife, and Worlds Destroyed (Floods).

HUM 150 International Cinema 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students study the evolution of foreign films made between the 1890s and the present. Major filmmakers and film movements are reviewed through examination of film content and cinematic techniques. Films will also be evaluated as reflections of their time and place.

HUM 160 American Film 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The development of American cinema from its beginnings in 1891 to the present is studied. The films, viewed in class, are discussed in terms of technique as well as in terms of content. The course relates American cinema to themes in American culture.

HUM 170 Montreal World Film Festival 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This brief course will be held at the Montreal World Film Festival in late August. Students travel to Montreal to attend screenings of films at the Festival. This course will appeal to those with an interest in film or in cross-cultural travel as it offers both intensive film-viewing and an introduction to the largest French-speaking community in North America. The course fee will cover round-trip train travel from Windsor, hotel accommodations in Montreal, passes to ten Festival films and the Festival program guide. Orientation sessions will be held both on campus and in Montreal.

HUM 175 Arts and Cultures of Middle East 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: Computer Literacy
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the rich history and contributions of the Middle East with a focus on Islamic Cultures from the 6th Century to the present. The spread of Islam will be studied against the backdrop of the contemporary Byzantine and Persian Empires. Cultural exchange and culturally unique developments in the arts and architecture will be traced. Students will gain an introductory understanding of the tenets of Islam, Mohammed the founder of Islam, and the various sects and interpretations of Islam. This course is geared towards students with an interest in history as well as those who want to gain a deeper understanding of the contemporary world. The title of this course was previously Arts and Cultures of Middle East (3000 BCE - 1800 CE).

HUM 185 The Horror Film 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a study of the horror film with emphasis on cultural relevance and aesthetic qualities. The student will explore cinematic expressions of the horror genre in terms of technique as well as content. Both feature films and documentaries will be viewed and analyzed.

HUM 220 Great Directors 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HUM 120 and HUM 160, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will study the works of influential directors from a variety of eras and cultures. The focus will be on the individual creativity of the director as a powerful force in determining the aesthetic elements of the films which he/she produces. Instruction will cover classical auteur theory as well as more recent theories of authorship.

HUM 221 Film and Representation 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HUM 120 and HUM 160, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will study the way American films have represented race, class, gender, sexuality and ability throughout history. Students will critically evaluate various representations of diversity within American film. Additionally, they will gain insight into the ways in which cinematic images of different minority groups shape the way in which people are perceived in everyday life. Instruction will emphasize the acquisition of analytical skills relevant to film and cultural studies.

Iron Workers of America IWA

IWA 120 Introduction to Ironwork 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course in an introduction to ironworking for new apprentices. Course topics include job safety and health, blueprints and mathematics for ironworkers. Students will be introduced to oxy-acetylene cutting and safety in the classroom before completing hands-on assignments. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 122 Ironworker - General Rigging 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course introduces scaffold erecting, scaffold dismantling, and basic rigging along with cranes and other rigging power equipment. Topics include safety, signals, calculations, fiber and wire ropes, hardware, slings and reeving. Students will use differing tools and devices for rigging including cranes, fork trucks, tuggers, gantries and truck loading. Load security and student safety is emphasized. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 131 Introduction to Metal Building 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course provides an overview to metal building erection and finishing for new apprentices. Topics include primary and secondary framing and wall sheeting. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 141 Introduction to Reinforcing Ironwork 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an overview of reinforcing ironwork for new apprentices. Topics include material property and related CRSI and ACI codes and specifications. Students will develop additional blueprint reading skills specific to reinforcing steel. Various types of structures will be reviewed and students will be introduced to splicing and coupling. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 151 Rigging/Machinery Mover I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course focuses on advanced rigging skills including machinery moving, disconnecting power and hydraulic lines and the basics of reinforced steel. Students will practice loading, hauling, unloading, setting, aligning, laser leveling and grouting. Emphasis will be placed on reading and interpreting blueprints for proper positioning and application to different types of reinforced steel structures. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 155 Rigging/Machinery Mover II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces conveyor systems, their uses, and maintenance requirements. Terminology, systems components, basic installation, devices and mechanisms will be covered. Rigging as it applies to different types of structural details will be emphasized. This course prepares students to take the Crosby Master Rigging and CDL Certification tests. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 161 Introduction to Architectural and Ornamental Ironwork 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course covers architectural wall systems. Students will learn about curtain wall systems, window wall systems, sloped walls, cable walls, skylights and testing. Students will gain experience erecting storefronts, entranceways and glass rails. Students will be introduced to sealants and glazing systems. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 172 Introduction to Structural Features 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course provides an overview of the structural features of a building. Students will also be introduced to instruments, tools and fasteners with a focus on leveling and anchors. Topics include erecting columns, band beams, joists and trusses, plumbing and aligning, decking and various types of bolts. Classroom training will be supplemented with hands-on experience. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 191 Reinforced Iron and Structures for Rigging 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is an overview of reinforcing ironwork for new apprentices. Reinforcing iron topics include material property and related CRSI and ACI codes and specifications. Structural topics include erecting columns and beams, joists and trusses, plumbing and aligning, decking and various types of bolts. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 201 Introduction to Welding 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course continues the theory and practice of welding. Students learn Oxy-Acetylene cutting and welding in addition to shielded arc welding. Students receive instruction in welding symbols, details, procedures, codes, qualifications, inspections and FEMA requirements. Related safety is covered. Students are encouraged to take and pass the SMAW certification test. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 224 Labor and Trade History 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

The history and future of labor and trade unions with particular emphasis on Ironworkers will be discussed. Students will be introduced to skills and practices needed to be a foreman for ironworkers. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 235 Advanced Metal Building 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course provides hands-on experience in metal building erection and finishing. Students will install insulation, siding, metal roofing, flashing and trim. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 241 Advanced Reinforcing Ironwork 7 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
105 lecture, 0 lab, 0 clinical, 0 other, 105 total contact hours

This course continues training for reinforcing ironwork with emphasis on ACI codes 318 and 117 and the CRSI Manual of Standard Practices. Students will focus on unbonded mono-strand and bonded post tensioning installations, stressing, blueprints and troubleshooting. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 265 Advanced Architectural and Ornamental Ironwork 6 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
90 lecture, 0 lab, 0 clinical, 0 other, 90 total contact hours

This course continues training for architectural and ornamental ironworkers. Students will install several different mock-up systems focusing on correct installation of metal and composite wall panel systems, associated trim and openings. The selection of wall systems based on structural and metal building types will be discussed. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 272 Advanced Structural Features 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers topics such as bridges, towers, wind turbines, stair stringers and other unique layouts. This course is only available for Ironworker apprentices through the Local 25 training center.

Ironworker Instructor Training IWT

IWT 101 Principles of Instruction and Instructional Planning 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

In this course, the participant is provided an opportunity to get up in front of the course participants and make a short presentation. Topics include introducing and summarizing a classroom presentation, presenting an interactive presentation, presenting a demonstration, and questioning and reinforcement techniques. Participants are also taught how to plan and conduct courses within the local union's curriculum. In addition, participants will learn how to develop a course syllabus, write learning objectives, plan for teaching in the classroom and shop components of a course, use Ironworker training packages, and use basic audio-visuals. Participants will also learn how to administer tests, record test results, complete a grade book, and determine if an apprentice has passed a course. Limited to Ironworker Instructor Training program participants.

IWT 102 Testing Strategies, Communication and Motivation 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

Developing and administering knowledge and skill tests are covered in this course. Participants will learn to plan for developing tests and then administering tests using multiple-choice, true-false, matching, and completion test items. Participants will also learn to administer and score performance or skills tests. Additional focus is on techniques and strategies for motivating adult learners in an instructional setting and developing good communication and listening skills. Also addressed is the issue of classroom discipline and control. Role-playing and simulation activities are included. Limited to Ironworker Instructor Training program participants.

IWT 103 Illustrated Lectures and Facilitation Skills 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; IWT 101
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

The focus of this course will be on further developing the classroom skills of experienced instructors. Participants will prepare and deliver one or more presentations during micro-training exercises. Classroom instruction will be delivered primarily through PowerPoint presentations and teaching demonstrations. The course focus is also on facilitation and classroom training skills the participant can use to make classroom sessions more interactive and participatory. In this course, participants will learn how to develop and use small-group activities including case studies and role-plays. Participants will also learn how to facilitate brainstorming sessions and how to lead discussions. Limited to Ironworker Instructor Training program participants.

IWT 130 Introduction to Computers 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course is designed for participants who have never (or rarely) used a computer. Working in Windows 7, participants will learn about common computer terminology, hardware and software. This course is structured to maximize the student's understanding of computers through a lecture-based and hands-on approach. Topics include keyboarding, how to use a mouse, file management (how to create, save, move, delete, and manipulate files), basic word processing (Microsoft Word), how to back up files to a CD, how to transfer files using a USB flash drive, how to set up an LCD projector, and how to send and receive e-mail. This course will not include PowerPoint, Access or Excel. Limited to Ironworker Instructor Training program participants.

IWT 131 Computer Applications I 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; IWT 130 or related computer experience
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

In this course, the participant is introduced to Microsoft Word and PowerPoint. Topics include the fundamentals of formatting and creating documents (e.g., letters, handouts, PowerPoint presentations, and tests), graphics, and tips and tricks of the Internet. The participant will develop realistic course materials and present the solutions at the end of the week. Limited to Ironworker Instructor Training program participants.

IWT 132 Computer Applications II 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; IWT 131 or extensive experience with Microsoft Office
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course is designed for the participant who has completed the Computer Applications I (IWT131) course or has extensive experience with Microsoft Office. Upon completion of this course, the participant will be able to use Microsoft Access and Excel. Instruction on advanced formatting within Microsoft Word and PowerPoint will also be included. Topics include the fundamentals of creating databases and spreadsheets (e.g., mailing lists, inventory records, and grading systems), integrating blueprints and photo images, and how to use the Internet. The participant will develop relevant training materials and present the solutions at the end of the week. Limited to Ironworker Instructor Training program participants.

IWT 201 Working with Learners with Special Needs 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

The focus of this course is on the challenges created for apprenticeship instructors who work with learners with special needs in classroom and shop environments. Participants will become familiar with categories of special-needs learners and general characteristics (e.g., learning disabled, limited English speaking, substance abuse, emotional problems, and reading/math difficulties) as well as a menu of helpful instructional strategies. Information on learning styles and teaching styles will also be addressed. Limited to Ironworker Instructor Training program participants.

IWT 203 Bonded Post-Tensioning Ironworker Certification 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

In this course, students will receive instruction on the installation of bonded post-tensioning systems, including multi-strand and bar systems used in bridges, superstructures and buildings. New curriculum materials and instructors guide will be used and will encompass installation, stressing, and grouting procedures. Day three of the course will include hands-on training in the skill practice area, so participants should dress appropriately. At the conclusion of this course, a representative from the Post-Tensioning Institute (PTI) will administer the certification examination for bonded post-tensioning. Limited to Ironworker Instructor Training program participants.

IWT 204 Reinforcing Concrete for Your Apprenticeship Programs 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This "train-the-trainer" course uses dynamic teaching techniques to introduce the Reinforcing Concrete for Ironworkers training package available from the National Fund. This course will introduce the reference manual, student workbook, instructors guide, blueprints, and DVD that contain the latest information on concrete reinforcing materials, tools, and techniques. Limited to Ironworker Instructor Training program participants.

IWT 205 Foreman Training for Ironworkers 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course is designed to develop skilled Ironworker foremen. During this course, the participants will learn the roles and responsibilities of the foreman. In addition, they will learn how to create an effective work team, communicate effectively, apply problem-solving skills, document and maintain records, maintain labor-management relations, plan and schedule work, implement a safety program, and ensure the quality of work. Limited to Ironworker Instructor Training program participants.

IWT 207 Teaching the History of the Ironworkers Union 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course will enable the participants to teach the history of the Ironworkers Union as well as to discuss major events in American labor history. The evolution of construction technologies and the effect these changes had on our union will also be examined. Limited to Ironworker Instructor Training program participants.

IWT 208 Operating Layout Instruments 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course will provide the necessary skills to use layout equipment during the erection of all facets of the Ironworking trade (e.g., structural steel, precast concrete, curtain wall/window wall, metal buildings, and rebar). The course will consist of hands-on training using several different types of instruments. Limited to Ironworker Instructor Training program participants.

IWT 209 Ironworker COMET Train-the-Trainer 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course will enable the participants to deliver the Construction Organizing Membership Education Training (COMET) program for Ironworkers developed for the AFL-CIO Building and Constructions Trades Department by Cornell University and the George Meany Center. COMET is an important prerequisite to an effective construction-organizing campaign in that it emphasizes membership awareness and enlists broad support for organizing activities. Limited to Ironworker Instructor Training program participants.

IWT 210 Approved MSHA Instructor Course 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Resume detailing teaching and work experience related to mining operation must be presented the first day of the course.; Submit current Red Cross (or equivalent) certification and the National Fund OSHA 500 Instructor card to the Safety Department according to due date stated in course catalog

22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course will provide the participants with a detailed presentation of the Federal Mine Safety & Health Administration's (MSHA) training requirements (CFR Title 30 Part 46, and Part 48) for personnel employed at mine facilities. It will introduce the participants to the training materials developed by the National Fund and MSHA, including an overview of a surface mine operation (conveyors, ball mills, crushers, etc.). Upon completion of the course, the participant's name will be submitted to the Department of Labor for approval as an instructor of Surface or Underground Mining Training. Limited to Ironworker Instructor Training program participants.

IWT 211 Rigger Trainer Development Program 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This Rigger Trainer Development Program will cover fundamental and advanced rigging concepts with emphasis on proper rigging techniques per ASME (American Society of Mechanical Engineers), OSHA, and manufacturing recommendations. Each course session will incorporate both a classroom presentation as well as the opportunity to work in a workshop setting to solve various real-world rigging problems. Participants will be instructed on the new B30.26 "Rigging Hardware" standard that went into effect in 2006, and information will be shared on the B30.9 "Sling" update. Other topics discussed will be proper selection and application of blocks, plate clamps, steer erection standard, rigging math, and a computer tools workshop to make participants aware of the various Crosby Rigging CD-ROMs that may be used to educate others. Limited to Ironworker Instructor Training program participants.

IWT 212 Conveyor Installation and Industrial Maintenance 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course will provide the participant with an overview of the installation of and the theory behind various types of conveyor equipment used in the manufacturing sector. It will also cover the theory and practice behind industrial maintenance techniques on various mechanical installations in this sector. Limited to Ironworker Instructor Training program participants.

IWT 214 Structural Steel Erection 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

The objective of this course is to enable participants to build a structural steel erection program to meet the participants' needs with the goal of enhancing their overall work performance. Topics covered will be taken from the new structural training package with emphasis on general safe erection practices and procedures, tools and equipment, planning and scheduling, material handling, bolting up, and plumbing and aligning. Limited to Ironworker Instructor Training program participants.

IWT 217 National Welding Certification Program of North America 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

22.5 lecture, 22.5 lab, 0 clinical, 0 other, 45 total contact hours

Using Miller and Smith Equipment, the participants will have the opportunity to test and inspect various National SMAW, FCAW, and GTAW welding procedures on plate and pipe. Upon successful completion of each test, the participant will receive a corresponding National Welder Certificate and identification card. GTAW and GMAW-P will be introduced on miscellaneous metals. Participants who are certified welders will learn advanced inverter technology, troubleshooting welding equipment and systems, and multi-process use of newer equipment. Limited to Ironworker Instructor Training program participants.

IWT 219 Certified Welding Inspector Recertification Course 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Previously certified as a CWI and requiring a 9-year recertification

30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This review course is designed to prepare previously certified welding inspector for their 9-year recertification examination. A representative of the American Welding Society will administer the required section of the CWI examination to participants on the final day of the course. Limited to Ironworker Instructor Training program participants.

IWT 220 New Seismic Requirements for Structural Steel 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course, presented by representatives of the Lincoln Electric Company, covers the latest seismic (earthquake) requirements for structural steel welding. The classroom and hands-on instruction focus primarily on the AWS D1.8 recommendations for FCAW welding: electrodes, qualification, design and fabrication. This course is recommended for areas with seismic requirements. Limited to Ironworker Instructor Training program participants.

IWT 223 Ornamental Wall Coverings and Glass Railing 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

10.5 lecture, 12 lab, 0 clinical, 0 other, 22.5 total contact hours

This course will focus on types and installation of curtain wall, window wall, storefronts, entrance ways and glass railing. In addition, storage, safe handling, application of caulking and installation of glass will be taught. A portion of this course will consist of hands-on training. Limited to Ironworker Instructor Training program participants.

Journalism JRN

JRN 111 Introduction to Journalism 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this introductory course, students begin by examining, discussing and analyzing news stories delivered in various forms, identifying fundamental elements of style, tone, content. Students progress to interviewing live sources, writing news articles, and reviewing relevant rules of grammar. Examination of interview techniques and newsroom organization is also included. This course was previously ENG 101.

JRN 210 Introduction to Copy Editing 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students practice editing copy for publications with an emphasis on newspapers and newspaper websites. Students write headlines; edit news articles for tone, style, and content; and exercise news judgment as it pertains to story placement, page layout, and audience with attention to legal and ethical standards.

JRN 217 Introduction to Feature Writing 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; JRN 111 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students write articles such as profiles, obituaries, and human interest stories with an emphasis on various feature writing and reporting techniques. These may include narrative leads, circle kickers, interviews with multiple sources, online research and crowd-sourcing using social media. Media law and ethics are also examined. This course was previously ENG 217. The title of this course was previously Feature Writing.

JRN 220 Introduction to Digital Journalism 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; JRN 111 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students explore ways to report news and information digitally. Students use social media, digital images, and digital video along with text to report stories they gather and post on web-based blogging platforms while observing the ethical and legal conventions of professional journalism. The title of this course was previously Journalism for the Web.

Machine Tool Technology MTT

MTT 102 Machining for the Technologies 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

This course provides an introduction to basic machine tool operations. Emphasis is placed on shop safety. Topics covered include: inch and metric precision measurement tools, tool identification, cutting speed calculations, drilling and tapping. Lab projects cover the basic operation of contour band saw, vertical milling machine and turning on lathe.

MTT 105 Machine Tool Skills Laboratory 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MTT 102 or MTT 111, minimum grade "C"
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students enrolled in other courses are given an opportunity to use the machine shop with faculty instruction. Many classes on campus require students to build or modify parts. For example, classes such as robotics require students to design and build working manufacturing cells. Lecture, along with demonstration, will be used to make students aware of various machine tool setups. Students who want to maintain their machine tool skills can select from dozens of projects available.

MTT 111 Machine Shop Theory and Practice 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; MEC 101 minimum grade "C", may enroll concurrently; MTT 102 minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is a second level course in machine tool operation. Topics that will be covered include: safety, precision measurement, feeds and speeds, rotary tools and turning tools. In addition to the above, students will gain valuable "hands-on" experience learning advanced operations on the sawing machines, engine lathes, milling machines and grinding machines.

MTT 174 MTT Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MTT 202; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

Students are placed in an approved work experience to gain skills and knowledge offered by the employer. Together with the instructor and the employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experiences. Students with experience equivalent to MTT 202 may contact the instructor for permission to waive the prerequisite.

MTT 240 Mechanical Trades 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This course addresses mechanical fundamentals for students in the millwright and mechanical trades. Topics include safety, safe working loads for ropes and cables, structural materials/applications, types/applications of lubricants, bearings, belts, chains, sprockets, sheaves, fasteners, conveyor systems, cranes, and power lifts. Projects apply plant layout and material handling methods, manufacturing sequencing, line balancing, flow requirements, workstation layout, ergonomic and space requirements. This course contains material previously taught in MTT 140.

MTT 274 MTT Co-op Education II 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MTT 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

Students are placed in an approved work experience to gain skills and knowledge offered by the employer. Together with the instructor and the employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experiences.

Magnetic Resonance Imaging MRI

MRI 101 MRI Safety 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Magnetic Resonance Imaging (MRI) program.
Corequisites: MRI 125
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students are introduced to the principles of Magnetic Resonance Imaging (MRI) safety for the patient as well as occupational and ancillary personnel. The potential hazards and biological effects associated with the MRI environment and MRI procedures will also be discussed. Topics include magnetism, properties of magnetism, MR system components, MR magnets, radio frequency (RF) systems, gradient systems, system shielding, patient screening, contrast agents, and safety zones.

MRI 110 MRI Physics I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Magnetic Resonance Imaging (MRI) program
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the physical principles of Magnetic Resonance Imaging (MRI), including the basic physics of MRI. Topics include magnetism, MRI signal production, image contrast, spatial localization including k-space filling, and an introduction to pulse sequence diagrams.

MRI 120 MRI Procedures I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Magnetic Resonance Imaging (MRI) program
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn the Magnetic Resonance Imaging (MRI) scanning procedures for the central nervous and musculoskeletal systems. Topics include scanning pulse sequences, positioning and patient care, sectional anatomy, and pathology. Anatomical structures and the plane that best demonstrates anatomy will be discussed as well as signal characteristics of normal and abnormal structures.

MRI 125 MRI Clinical Education I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Magnetic Resonance Imaging (MRI) program
Corequisites: MRI 101
0 lecture, 0 lab, 360 clinical, 0 other, 360 total contact hours

This is the first clinical course for certified radiologic technologists ARRT (R), who are admitted to the Magnetic Resonance Imaging (MRI) program. Students will be introduced to the clinical practice of MRI with emphasis on basic magnetic resonance (MR) scan procedures, MRI safety and patient care. This course requires a 15 week, 24-hours/week clinical rotation under the supervision of a certified MRI technologist.

MRI 130 MRI Physics II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Magnetic Resonance Imaging (MRI) program; MRI 110 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn advanced physical principles of Magnetic Resonance Imaging (MRI). Topics include maximum intensity projection image formation, diffusion and perfusion, fundamentals of flow including types of flow, flow motion correction, vascular imaging, imaging parameters and tradeoff, artifacts and compensations.

MRI 135 MRI Quality Assurance 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Magnetic Resonance Imaging (MRI) program
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, students receive a comprehensive overview of the Magnetic Resonance Imaging (MRI) quality assurance program. Topics include the qualifications of personnel, the quality control program, safety policies and image quality specific to MRI.

MRI 140 MRI Procedures II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Magnetic Resonance Imaging (MRI) program; MRI 120 minimum grade "C"
Corequisites: MRI 145
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn the Magnetic Resonance Imaging (MRI) scanning procedures for the chest, abdomen, and pelvis. Topics include scanning pulse sequences, positioning and patient care, sectional anatomy, and pathology. Anatomical structures and the plane that best demonstrates anatomy will be discussed as well as signal characteristics of normal and abnormal structures.

MRI 145 MRI Clinical Education II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Magnetic Resonance Imaging (MRI) program; MRI 125 minimum grade "C"
Corequisites: MRI 140
0 lecture, 0 lab, 360 clinical, 0 other, 360 total contact hours

This is the second clinical course for certified radiologic technologists ARRT (R), who are admitted to the Magnetic Resonance Imaging (MRI) program. Students will observe, assist, and perform basic patient care and MRI clinical procedures under direct supervision. Students are expected to gain practical experience and demonstrate competency in MR scanning techniques, safety procedures, image evaluation, image post processing, and patient care. This course requires a 15 week, 24-hours/week clinical rotation under the supervision of a certified MRI technologist.

MRI 160 MRI Advanced Imaging Procedures 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Magnetic Resonance Imaging (MRI) program
Corequisites: MRI 165
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn advanced Magnetic Resonance Imaging (MRI) scanning procedures to date. Topics include breast MRI including dynamic contrast enhanced MR of the breast, cardiac MR including myocardial perfusion and cardiac stress MR, function and functional MR, MR enterography (MRE), colonography, molecular MR imaging and MR elastography.

MRI 162 MRI Pulsed Sequence, Imaging Options, and Parameters 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Magnetic Resonance program

30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students learn the parameters and imaging options necessary to create quality magnetic resonance (MR) images. Topics include magnetic resonance (MR) pulse sequences, image formation, and image contrast. The pulse sequences covered are spin echo, fast spin echo, gradient echo, inversion recovery, echo planar, parallel imaging, and spectroscopy. Tissue characteristics, contrast agents, and post-processing techniques are also covered.

MRI 165 MRI Clinical Education III 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Magnetic Resonance Imaging (MRI) program; MRI 145
Corequisites: MRI 160
0 lecture, 0 lab, 320 clinical, 0 other, 320 total contact hours

This is the third clinical course for certified radiologic technologists ARRT (R), who are admitted to the Magnetic Resonance Imaging (MRI) program. Students are expected to independently perform patient care and MRI clinical procedures under indirect supervision. Students are required to complete all mandatory and elective clinical competency required by the ARRT. This course requires a 10 week, 32-hours/week clinical rotation under the supervision of a certified MRI technologist.

Mathematics MTH

MTH 067 Foundations of Mathematics 4 credits

Level I Prerequisites: Academic Reading Levels 4 or 5; no minimum writing level; Academic Math Level 1, no higher than level 2
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This is the second of three courses in the developmental math sequence. The focus of this course is to develop students' problem-solving and basic algebra skills. Topics for this course include applications involving integers, decimals and fractions, as well as applications of percents, proportions and consumer credit, algebraic expressions, algebraic properties, algebraic operations and multi-step equation-solving. The Cartesian Coordinate system and applications of algebra are also introduced. Students who successfully complete this course with a minimum grade of "C" will raise their Academic Math level to 2.

MTH 094 Pathways to Math Literacy 4 credits

Level I Prerequisites: Academic Reading Level 5; no minimum writing level; Academic Math Level 2
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will learn about data, numbers and patterns, unit conversions, basic probability, dimensional analysis, algebraic equations as a problem-solving tool, linear and non-linear relationships, standard deviations and the normal curve. Pythagorean Theorem and the distance formula are also covered. Microsoft Excel is used as a tool for data analysis, calculation and display. It is structured in a non-lecture format. Group work and participation will be required each day of class with problem solving and applications. Short technology assignments will be aligned with each lesson. Successful completion of this course with a minimum grade of "C" will raise your Academic Math level to 3. This course is not intended for those students planning to go on to the precalculus/calculus sequence. Those students should take MTH 097 instead.

MTH 097 Foundations of Algebra 4 credits

Level I Prerequisites: Academic Reading Levels 4 or 5; no minimum writing level; Academic Math Level 2

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this developmental math course, students will focus on algebra. Topics include linear functions, polynomials and systems of linear equations. Successful completion of this course with a minimum grade of "C" will raise your Academic Math level to 3.

MTH 099 Math Placement Acceleration Lab 1 credit

Level I Prerequisites: Academic Reading Level 3; no minimum writing level; students must have taken the ALEKS PPL placement test in the testing center
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This class is intended to give students an opportunity to increase their math placement test score. Students will work using an online system to practice skills then retest. Instruction will be provided as needed on a one on one basis.

MTH 125 Everyday College Math 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will further the mathematical knowledge of concepts and applications they might encounter in everyday adult life. Topics will include four main subject areas: advanced consumer math and formulas (mortgage interest, compound interest, loans and credit cards), Logic and Sets (sets and operations, Venn Diagrams), applications of Algebra (ratio and proportion; modeling) and statistics (probability, measures of center and spread, the normal curve).

MTH 148 Functional Math for Elementary Teachers I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is the first in a two-course sequence presenting the mathematical concepts and problem-solving techniques necessary for success in a teaching career at the elementary school level. It is not a course solely for math teachers; rather it provides a general mathematical background for teachers of all subjects. Topics include problem-solving, sets, numeration systems, number theory and the whole, integer and rationale number systems.

MTH 149 Functional Math for Elementary Teachers II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; MTH 148 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is the second in a two-course sequence presenting the mathematical concepts and problem-solving techniques necessary for success in a teaching career at the elementary school level. It is not a course solely for math teachers; rather it provides the general mathematical background for teachers of all subjects. Topics include probability, an introduction to statistics, introductory geometry, congruence and similarity and measurement concepts.

MTH 160 Basic Statistics 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will use elementary statistics to achieve statistical literacy. Emphasis is on interpretation and evaluation of statistical results. Broad topics include descriptive statistics, basic probability theory and inferential statistics. Specific topics include describing data sets graphically and numerically, measures of center and spread, bivariate data and least squares regression, correlation, random variables, basic probability distributions, confidence intervals and hypothesis tests. A graphing calculator is required for this course. See the time schedule for current brand and model.

MTH 167 Math Applications for Health Science 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students review the mathematical and algebraic skills required to solve calculations in health-related fields. The topics, which relate to safety and ethics in the health care field, include the metric system, proportions, dimensional analysis, interpretation of medication orders, basic dosage calculations and calculations used in specialty areas.

MTH 169 Intermediate Algebra 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

Intermediate Algebra is the second course in the algebra sequence. The following functions will be studied: quadratic, rational, radical, logarithmic and exponential. A graphing calculator is required for this course. See the time schedule for the current brand and model. Successful completion of this course with a minimum grade of "C" will raise your Academic Math level to 4.

MTH 176 College Algebra 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course provides the necessary background for pre-calculus. Topics include graphs of functions including transformations, function composition, variation, polynomial functions of degree two and higher, polynomial and synthetic division, roots of polynomials, complex numbers, rational functions and equations, non-linear equations and inequalities, inverse functions, exponential functions equations and models, logarithmic functions equations and models and applications. A graphing calculator is required for this course. See the time schedule for the current brand and model. Successful completion of this course with a minimum grade of "C" will raise your Academic Math level to 5. This course was formerly MTH 179.

MTH 178 General Trigonometry 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 5 or MTH 176 minimum grade "C", may enroll concurrently

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students receive a rigorous background in trigonometry. Topics include trigonometric functions, inverse trigonometric functions, radian measure, trigonometric graph, identities, solutions of trigonometric equations, solution of triangles, rotation and vector triangles. A graphing calculator is required for this course. See the time schedule for the current brand and model.

MTH 180 Precalculus 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 5

75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This course provides the necessary background in analytic geometry, trigonometry and advanced algebraic topics for calculus. Topics include trigonometric functions, identities and graphs, the conic sections, sequences and series and the binomial theorem. A graphing calculator is recommended for this course. See the time schedule for the current brand and model. Successful completion of this course with a minimum grade of "C" will raise your Academic Math level to 7.

MTH 181 Mathematical Analysis I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course teaches the methods and applications of finite mathematics applied to social science and business. Topics covered include solutions to linear equations and inequalities, mathematics of finance, matrices, linear programming, sets, probability and statistics. A graphing calculator is required for this course. See the time schedule for current brand and model.

MTH 191 Calculus I 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 7

75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This is a first-semester college calculus of a single variable course. Topics include limits, continuity, transcendental functions, derivatives, antiderivatives, applications of derivatives, including optimization, maximum and minimum problems, business, economics, sports, engineering, physics, Newton's method, and applications of integration. A graphing calculator is required for this course. See the time schedule for the current brand and model.

MTH 192 Calculus II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MTH 191 minimum grade "C"

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This is a second semester college calculus course of one variable. Topics include applications of integration, integration techniques, L'Hopital's Rule, improper integrals, infinite series, parametric equations and polar coordinates. A graphing calculator is required. See the time schedule for current brand and model.

MTH 197 Linear Algebra 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MTH 191 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This is an introductory college course in linear algebra. Topics include linear systems of equations, properties of vectors and matrices, determinants, vector spaces, linear transformations, eigenvalues and applications. A graphing calculator is required for this course. See the time schedule for current brand and model.

MTH 293 Calculus III 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MTH 192 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

Math 293 is the third course in the standard Calculus sequence. This course covers differential, integral and vector calculus for functions of more than one variable. To confirm transfer equivalency, consult a counselor or check the Web page of the college to which you are transferring. A graphing calculator is required for this course. See the time schedule for current brand and model.

MTH 295 Differential Equations 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MTH 293 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This is a one-semester course on solving differential equations. Topics include solving first and higher order linear and non-linear differential equations, solving special differential equations including the Cauchy-Euler types of equations, the Bernoulli types of equations, both homogeneous and non-homogeneous equations, and exact equations. The course also covers Laplace Transforms, solving systems of linear differential equations using the eigenvalue method. The course also covers linearization, numerical methods, and phase plane analysis. In addition to the Calculus 3 prerequisite, successful completion of MTH 197 (Linear Algebra) is strongly recommended. A graphing calculator is required for this course. See the time schedule for current brand and model.

Mechatronics MEC

MEC 100 Materials and Processes 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students receive an introduction to basic terms, mechanical and physical properties, and characteristics and structures of materials. Heat treatment of ferrous and non-ferrous metals and the effect on tensile, torsion, and impact will be investigated. The study of common consumer products will identify material types and processes used in manufacturing. In a capstone project, students will associate two different materials to a product identifying the advantages and disadvantages for both. Mechanical and physical properties, characteristics, ease of manufacturing, cost, environmental impact, and life cycle will be compared. This course was previously AMS 103.

MEC 101 3D Modeling and Blueprint Reading 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 60 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students create 3D models used to output files (.stl, .ncc, etc.) used in manufacturing products. Students are exposed to software used in the manufacturing and design of product and process, as well as drawing, views, types, dimensioning systems, first and third angle projections and many of the symbols used in manufacturing and assembly. The knowledge and skills gained in this class will be used in many of the classes taken in the mechatronic program.

MEC 120 3D-Printing: Machine, Process and Innovation 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students will look at three aspects to Fusion Deposit Modeling (FDM), one of the most popular forms of 3D printing. First covered is assembly and alignment of a 3D printing machine. Second, students explore programming and process parameters, using open source STL files. Finally, students will learn an entry level CAD software.

MEC 201 Mechanisms 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; MEC 101 minimum grade "C-"
0 lecture, 60 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will use hands-on experiences to gain an understanding of the theory and principles of electro-mechanical design in industrial devices and products. Students will examine the fundamental forces and motion within mechanisms. This class is a foundation class for the mechatronics program.

MEC 224 Robotics IV 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ROB 223 minimum grade "C"
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students will learn about advanced programming of robots and programmable controllers in an integrated work cell. Problems related to maintenance and trouble-shooting constitute a major segment of the course. A group project involving the design and construction of a work cell that simulates some industrial process is an enjoyable conclusion to this course. This course contains materials previously taught in ROB 224.

Medical Billing & Coding MBC

MBC 161 Pathopharmacology for the MBC Professional 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 109 or BIO 111, minimum grade "C" and HSC 124, minimum grade "C" or completion of HIT 101 (inactive course), minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will study pathophysiology and pharmacology content. This course places emphasis on the disease processes affecting the human body via an integrated approach to specific disease entities, including the study of causes, diagnosis and treatment of disease. The course also emphasizes understanding of the action of drugs, including the absorption, distribution, metabolism and excretion of drugs by the body. This course was previously HIT 161.

MBC 185 Medical Computer Skills and Electronic Health Records 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will explore the ways in which modern computer technology such as electronic health records (EHRs), personal health records (PHRs), and health information management systems are being used to improve patient care and efficiencies. Students will learn strategies for the conversion of paper documents from legacy medical office systems to EHRs. Students will also gain hands-on practical experience in the use of an EHR system. Laws and ethical issues affecting the privacy of patient information will be examined. Best practices in the handling of healthcare and patient data will be discussed. This course was previously BOS 185.

MBC 205 Introductory ICD Coding 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 109 or BIO 111 and HSC 124, minimum grade "C"
Corequisites: MBC 215
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to the process of transforming narrative descriptions of diseases and injuries into alphanumeric codes used to report and share patient healthcare issues with healthcare providers and insurers. An overview of ICD-10 disease coding will be provided, and students will be given hands-on training in encoder usage. This course was previously HIT 205.

MBC 210 Intermediate/Advanced ICD Coding 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MBC 205
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is one of a series of four medical coding courses. In this course, students will apply ICD-10 to complex coding scenarios including coding for Prospective Payment Systems (PPS) such as DRG, RUGS, HHRG, etc. Students will also learn about case mix analysis, severity of illness systems, and authentic coding and they will examine strategies for the implementation of coding compliance, auditing, reporting and quality monitoring. This course was previously HIT 210.

MBC 215 Introductory Procedural Coding 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 109 or BIO 111 and HSC 124, minimum grade "C"
Corequisites: MBC 205
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to the principles and application of procedure coding systems such as ICD-10-CM Volume III and ICD-10-PCS, CPT 4 and HCPCS. Students will also learn about procedural groupings such as APC and RUGs. This course was previously HIT 215.

MBC 220 Intermediate/Advanced Procedural Coding 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MBC 215
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is one of a series of four medical coding courses. In this course, students will perform complex procedure coding assignments using CPT and HCPCS Level II codes and learn about Medicare mandated resource based relative value scale payment schemas, ambulatory patient classifications and coding for ambulatory surgery centers. This course was previously HIT 220.

MBC 223 Medical Office Procedures 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 109 or BIO 111 and HSC 124; minimum grade "C"
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the professional characteristics of legal and ethical standards for the medical assistant. Using medical administrative software, students simulate situations where they input patient information, schedule appointments and handle billing. This course addresses front office administrative skills necessary for the medical assistant. This course was previously BOS 223.

MBC 224 Medical Insurance and Reimbursement 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HSC 124 and BIO 109 or BIO 111; minimum grade "C" all HSC and BIO requirements
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is an introductory billing course for those interested in a career in the medical office as a medical assistant, receptionist or insurance biller/coder. The course covers the fundamentals of health insurance, including plan options, carrier requirements, state and federal regulations, selecting relevant information from source documents, accurately completing claim forms and coding diagnoses and procedures. The student will be introduced to a variety of medical insurers, including Medicare, Medicaid, Blue Cross/Blue Shield, Tricare, CHAMPVA, Workers' Compensation and other third-party payers. Students should have basic computer and data entry skills. Medical software will be utilized to complete billing and coding exercises. This course was previously BOS 224.

MBC 250 Medical Coding Practicum 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MBC 185, MBC 210, MBC 220, MBC 223, MBC 224
0 lecture, 30 lab, 120 clinical, 0 other, 150 total contact hours

In this course, students will function as student interns (not as employees) in host physicians' offices or healthcare facilities and will apply their skills in classification and coding of diseases and procedures and perform other related billing and/or coding functions. The students' work will be supervised by WCC instructor(s) as well as healthcare office/facility staff. This course was previously HIT 250.

Motorcycle Service Technology MST

MST 106 Introduction to Powder Coating 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 111 or ASV 130 or MST 110, minimum grade "C"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the basic principles and process of powder coating. Powder coating is a finishing process for vehicle components that is an alternative to painting. Students will be introduced to tooling, media and procedures used to powder coat small components.

MST 110 Motorcycle Service Technology I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students are introduced to the operation of a motorcycle service department. Students will be instructed in the proper use of hand and shop tools. The theory, operation, tolerances, and specifications of basic internal combustion engines will be covered. Included in this class are the proper procedures for precision measurements, using a service and parts manual, and performing mileage-based maintenance. Emphasis is placed on time and quality proficiency.

MST 112 Advanced Powder Coating 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MST 106 minimum grade "C"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are exposed to more complex techniques used in the powder coating process. Advanced powder coating is a multiple layered coating process that is an alternative to custom painting. Students will further develop skills in tooling, media and procedures used to powder coat by applying them to larger components. Color matching, powder coating step-by-step process identification and proper media selection for specific applications will be discussed.

MST 120 Motorcycle Service Technology II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MST 110 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will learn to identify and explain the operational theory of motorcycle drivelines. They will learn to diagnose, service and repair primary and final drive systems, clutch assemblies, transmissions, wheels, brakes, and front and rear suspension components. They also learn the theory of frame geometry and design.

MST 130 Motorcycle Service Technology III 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MST 120 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students focus on problem-solving strategies for isolating defective components, troubleshooting and repair. Students will work on wiring harness, charging system, ignition system and starting system components. The principles, components, operation, troubleshooting, service and repair of both carbureted and fuel-injected systems will be covered.

MST 140 Motorcycle Service Technology IV 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MST 130, MTT 102 and WAF 105, minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students learn the proper procedure for preparing complete and accurate damage repair estimates through the use of manufacturer's service and parts manuals. Using a combination of classroom and hands-on skills training, students learn to diagnose, service and repair single- and multiple-cylinder engines.

MST 210 Performance Engine Technology 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MST 140 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

The student learns to identify the theory and components of a performance engine. They also learn the advantages and disadvantages of raising the level of peak performance of an engine. The course will supply the knowledge to design and install a performance enhancement package.

MST 220 Dynamometer Operations 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MST 140 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

Students learn to identify the components and operation of a load control dynamometer. The primary emphasis is on the student learning to use the dynamometer as a diagnostic, data acquisition, and tuning tool. The course will instruct the student in the design and application of various tuning technologies used in current custom fuel and ignition mapping. The student will develop the skills to become proficient in tuning carbureted vehicles.

MST 225 Advanced Dynamometer Tuning Systems 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MST 220 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

Students will be taught the skills to operate a load control dynamometer as an advanced tuning tool. The primary emphasis is on the student learning to use the dynamometer to troubleshoot and tune fuel injection systems on motorcycles and ATV's. They will learn the application of various technologies used by both the OEM's and aftermarket companies.

MST 230 Advanced Motorcycle Fabrication 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course begins the integration of the knowledge and skills acquired in the Motorcycle Service Technology programs and from coursework in Welding and Fabrication and Machine Tool Technology. Students will practice design skills including pattern development, mechanical drawing and fastener selection in the creation of a custom motorcycle frame, swing arm or billet accessory. Designed parts will be fabricated using welding, milling machine and lathe operation skills on various types of building materials including body sheet metal.

MST 235 Advanced Motorcycle Fabrication II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This is the second course in advanced motorcycle fabrication. This course expands on the knowledge acquired in Motorcycle Service Technology, Welding and Fabrication and in Machine Tool Technology. Areas of study will include all aspects of the complete design and fabrication of a custom motorcycle.

Music MUS

MUS 103 WCC Jazz Orchestra 2 credits

Level I Prerequisites: No Basic Skills
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

WCC Jazz Orchestra is a performance-oriented course for woodwinds, brass, percussion and string instruments, as well as electronic keyboards and vocalists. There is an emphasis on musical phrasing, blending, style and improvisation. This course will focus on melodic, harmonic and rhythmic skills necessary for performing in a big-band setting. The class will perform in the community and on campus. The lessons focusing on musical skills vary depending on the musical selections, which change each semester; therefore, this course may be completed for credit up to a maximum of four times.

MUS 104 Performance Workshop Ensemble 2 credits

Level I Prerequisites: No Basic Skills
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students explore the fundamentals of professional stage persona and etiquette through live events and concerts performed at WCC and throughout the community. The genres of music performed will range anywhere from rock, hip-hop, R &B, pop, and jazz. The instrumentation will focus on lead and rhythm guitar, electric bass guitar, piano, synthesizer, drums, woodwind, brass, strings, and vocals. Collaboration with stage and lighting technicians will round out the experience, allowing students to gain professional training in creating the ultimate concert experience. The title of this course was previously Top 40 Combo.

MUS 105 Jazz Combo and Improvisation I 2 credits

Level I Prerequisites: No Basic Skills
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This is a basic performance skills class for instrumental and vocal solo or small group expression in American Blues and Jazz. Students learn basic improvisation and listening skills, how to express their original ideas through the acquisition of chord and scale relationships and communication and group interaction skills. Students must demonstrate basic competency on their instruments. The title of this course was previously Basic Combo and Improvisation.

MUS 106 Jazz Combo and Improvisation II 2 credits

Level I Prerequisites: No Basic Skills; MUS 105 or equivalent performance experience with an instrument or voice
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course is designed for the musician with some degree of competency to gain continuing experience and skill in performance and improvisation of different styles of blues and jazz music. This is a performance group which offers concerts at WCC and in the community-at-large. Students must play and have moderate mastery of an instrument or voice. The title of this course was previously Jazz Combo and Improvisation.

MUS 112 Washtenaw Community Concert Band 2 credits

Level I Prerequisites: No Basic Skills; consent required
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

The Washtenaw Community Concert Band is a performance-oriented course with an emphasis on learning and performing conventional concert band music. It will focus on melodic, harmonic and rhythmic skills necessary for high-quality performance in a concert band setting. The class will be combined with players from the community for rehearsals and will perform in the community and on campus. This course may be completed for credit up to a maximum of three times.

MUS 114 Fundamentals of Performance 1 credit

Level I Prerequisites: No Basic Skills
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This is a flexible performance ensemble class that encourages vocalists, instrumentalists, and other performance artists to create, rehearse and perform pieces of artistic or collaborative art. In addition to practicing fundamental techniques that expand the student's performance experience and vocabulary, students will create performance pieces to perform in the college and community. Students are encouraged to have fundamental fluency on an instrument (voice or performance area).

MUS 122 Washtenaw Community Concert Band II 2 credits

Level I Prerequisites: No Basic Skills; consent required
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

Washtenaw Community Concert Band II is a performance-oriented course with an emphasis on learning and performing conventional concert band music at a more advanced level. It will focus on advanced melodic, harmonic and rhythmic skills necessary for high-quality performance in a concert band setting. The class will be combined with players from the community for rehearsals and will perform in the community and on campus. The lessons focused on musical skills vary based on the musical selections, which change each semester; therefore, this course may be completed for credit up to a maximum of three times.

MUS 133 Beginning Guitar 2 credits

Level I Prerequisites: No Basic Skills
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course is a beginning guitar class focusing on playing chord, chord changes, fingerstyle techniques and beginning and intermediate chord progressions found in popular and folk music. This course was previously MUS 233.

MUS 134 Intermediate Guitar 2 credits

Level I Prerequisites: No Basic Skills; MUS 133 minimum grade "C"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This class covers advanced chord formations (Major 7th, Minor 7th, and Dominant 7th chords) and how to apply them in a song. It also covers Major and Minor Scales in every key and how to use them in songs by playing the melody. Advanced stages of the class will cover improvisation. Musical expression will also become an important factor. The students will be introduced to the term "the art of self expression." Students with experience equivalent to MUS 133 may contact the instructor for permission to waive the MUS prerequisite. This course was previously MUS 236.

MUS 136 Gospel Chorus 2 credits

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This is a solo and group performance class in the African-American tradition of gospel music. Techniques in vocal production, breathing, rehearsal, improvisation, and gospel music vocal arranging, as well as a brief history of gospel music will be covered. The course will include final performances each semester. This course may be completed for credit up to a maximum of three times.

MUS 140 Music Theory I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to give prospective musicians (hobbyist to professional) a basic foundation in reading and writing musical notation. Students will learn musical form, rhythm, meter, pitch notation, analysis of compositional elements, and the creative use of music. Students will also explore the basic concepts of self-motivated learning as it applies to music theory or a career in music.

MUS 142 Music Theory II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MUS 140
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will continue the development of their skills in reading and writing musical notation. Students will advance their skills in hearing and reading musical form, rhythm, meter and pitch notation. Students will analyzes compositional elements as they relate to the creative composition of music.

MUS 146 Songwriting I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

For the prospective song writer, this class is designed to enhance the various phases of songwriting: observation, lyric writing, musical accompaniment and collaboration skills. Students collaborate using their talents to produce songs and also become acquainted with musical styles through recordings and demonstrations. Students will be expected to write or collaborate with others to write a song at least twice in the semester. The title of this course was previously Songwriting and Creative Improvisation.

MUS 147 Arts, Media and Entertainment Law 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will study basic agreements, contracts, royalties, copyrights and other legal aspects in the Music, Arts and Media industries. Students who intend to perform, publish, record or produce artistic media artifacts need this important information. The title of this course was previously Entertainment Law.

MUS 154 Functional Piano I 2 credits

Level I Prerequisites: Academic Reading Level 3; Academic Writing Level 3
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This class is designed for those who wish to learn the fundamentals of playing the piano, including the ability to read and execute keyboard music harmonically and melodically. The course covers basic musicianship, piano technique fundamentals, elementary keyboard harmony, basics in reading music, pedal technique and keyboard facility for use in and support of other music classes. The course also offers an introduction to how the piano works, its development, and composers and pianists in various styles. This course was previously MUS 210.

MUS 155 Functional Piano II 2 credits

Level I Prerequisites: Academic Reading Level 3; Academic Writing Level 3; MUS 154 minimum grade "C"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course is a continuation of Functional Piano I, providing studies beyond the beginning stage. It focuses more on individual development in terms of technique, expression, and performance, as well as providing further keyboard skills, historical and theoretical background. This course was previously MUS 211.

MUS 162 Music Sequencing and Programming 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This class demonstrates how to compose songs using a MIDI keyboard workstation and focuses on making the recording process a one-person operation. The student will record and edit original compositions using multiple tracks and will quantize rhythms and simulate instruments such as piano, drums, guitar, and bass guitar. The class will include string and horn arranging.

MUS 165 Club DJ Mixing and Performance 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to the skills and abilities needed to become a professional DJ. These will include hosting a party, involving the audience, blending songs together and using equipment such as turntables, touch response platters, P.A. systems and lights. Students will compile a song library and develop a play list for specific occasions. Students will develop strategies for booking engagements and promoting their work.

MUS 170 Introduction to Audio Technology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a general introduction and survey of audio recording careers, software recording platforms, audio hardware, acoustics/principles of sound and music recording and general applications in computer-aided recording. Students will learn to do a critical analysis of their strengths and weaknesses against the requirements for building a profession in the music and audio/sound recording and music production fields. The title of this course was previously Computer Applications in Music.

MUS 175 Audio Recording Technology (Pro Tools Certification) 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MUS 170, may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will develop competency in use of the nationally recognized Avid Pro Tools. Students will learn the core skills; workflows; and concepts of recording, editing and mixing on an Avid Pro Tools system. Students may choose to take the Avid Pro Tools online exam for certification during the semester. If a student chooses to take and pass the exam, the student will be Avid Pro Tools certified. The title of this course was previously Audio Recording Technology I.

MUS 180 Music Appreciation: Our Musical World 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is an active participation course in which students will use music as a means for learning about the world around us. The course emphasizes the potential creative, critical-thinking and socio-cultural factors as they may best enhance the students' lives and careers. Many of the world's musical styles and geographic regions are considered.

MUS 204 Voice I 3 credits

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 45 other, 45 total contact hours

This course is a beginning course in voice, enabling the student to effectively sing with proper technique as well as perform beginning repertoire in class. The course covers fundamentals of vocal technique, basic anatomy and physiology of the voice, basic music terminology, and exposure to various vocal styles and genres. A significant amount of class time is spent on individual performance in a studio class setting.

MUS 205 Voice II 3 credits

Level I Prerequisites: No Basic Skills; MUS 204 minimum grade "C"
0 lecture, 0 lab, 0 clinical, 45 other, 45 total contact hours

This course is a continuation of MUS 204, providing studies beyond the beginning stage. It focuses more on individual development in terms of technique, repertoire, and performance. The course also further develops the student's knowledge of theory, sightsinging and basic musicianship as they apply to the singer. Students with experience equivalent to MUS 204 may contact the instructor for permission to waive the prerequisite.

MUS 209 Musical Theatre Song Performance Seminar 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MUS 204
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course is a studio/seminar on song performance in the musical theatre genre, and is intended for students with background in voice. Vocal technique, diction, performance techniques, and development of repertoire are emphasized in a studio class setting. Students perform frequently in class and receive coaching from the instructor as well as feedback from their classmates. It is suggested that this course be taken the first time in conjunction with DRA 209, Acting for Musical Theatre. Students with experience equivalent to MUS 204 may contact the instructor for permission to waive the prerequisite. This course may be completed for credit up to a maximum of three times.

MUS 239 Blues & Jazz for Guitar & Bass I 3 credits

Level I Prerequisites: No Basic Skills
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This class will focus on essential techniques and improvisational skills in Blues and Jazz guitar and bass guitar as relates to all styles of music. The class will give insight into improvisation, playing of chord progressions, comping, and playing of bass lines. Students will also learn essential elements in rhythm section dynamics and performance. The title of this course was previously Jazz Guitar I.

MUS 240 Blues & Jazz for Guitar & Bass II 3 credits

Level I Prerequisites: No Basic Skills; MUS 239
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This class will focus on intermediate and advanced skills in Blues and Jazz guitar and bass guitar as relates to all styles of music. The class will emphasize intermediate and advanced techniques in improvisation, blues and jazz composition and performance. Students with prior experience may contact the instructor for a prerequisite exemption. The title of this course was previously Jazz Guitar II.

MUS 245 Composition and Arranging for Keyboard 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MUS 175 minimum grade "C", may enroll concurrently
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students will be introduced to basic keyboard skills as related to composing music in diverse genres. Students will also learn basic use of virtual instruments and keyboard in arranging and layering for rhythm section (guitar, bass guitar, drums, piano and keyboards). The most successful students will have access to a piano or keyboard outside of the classroom. The title of this course was previously Music Producing and Arranging.

MUS 247 Mixing and Mastering 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MUS 170 and MUS 275, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will experience mixing and mastering music according to record industry standards. Students will use signal processing to enhance music to achieve the desired end product. They will adjust frequencies of multiple songs to master a CD that is radio-ready.

MUS 248 Sound Reinforcement for Stage 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to the components and usage of portable sound systems for live events. This course may be beneficial for artists and event managers who want to gain a basic understanding of sound systems. It is also designed to solidify the skill sets of those wishing to pursue a career in live sound.

MUS 251 Classical Piano I 3 credits

Level I Prerequisites: No Basic Skills; MUS 154 or MUS 155, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to introduce students to proper techniques of classical piano. Techniques include hand position, tone, dynamics, phrasing, and meter. The student will also learn music theory (form, chord structures, voice leading) and history as it pertains to the music. Short preludes and etudes and other appropriate repertoire will be introduced to further develop technique and reinforce an understanding of classical style. The student will have an opportunity to study works of master classical composers such as Bach, Beethoven, Mozart and Chopin.

MUS 275 Advanced Audio Recording Technology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MUS 175 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is a career-oriented course for advanced audio technology recording. Students apply progressive recording and mixing techniques to solo instrumental, small group and multi-track recordings. Students will learn microphone usage techniques, signal processors and effects, as they apply to industry-standard recording of audio. The title of this course was previously Audio Recording Technology II.

MUS 285 Self Management for Working Artists 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will learn how to market themselves or others in the music industry. Students will focus on developing interpersonal skills; preparing a portfolio; booking performances; preparing, analyzing and negotiating contracts; and determining the monetary value of the work of a musician. Students will explore how to manage their business while creating a multi-faceted career. Students may not earn credit in both ART 285 and MUS 285.

MUS 286 Music/Audio Project and Portfolio Production 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MUS 175 and MUS 275, minimum grade "C"; MUS 275 may enroll concurrently

30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this capstone class, students will complete, mix and master an array of projects determined by their career goals. Students will take part in special projects with outside clients as a way to foster professional skill-sets needed in all Music/Audio production fields.

Numerical Control NCT

NCT 101 Introduction to Computerized Machining (CNC) - I 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This is the first course of the numerical control series. Students are exposed to various aspects of automated machining centers used in automated manufacturing. Studies include an introduction to controllers, fundamentals of set-up and operation, programming CNC controllers, CAD CAM software and simulation software. This course contains material previously taught in NCT 112.

NCT 110 Introduction to Computerized Machining (CNC) - II 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NCT 101 minimum grade "C"

30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course is a continuation of NCT 101. This class focuses on the set-up and operation of CNC mills and lathes in the laboratory. Different parts will be machined, to specification, though variations of set-up and interactions with the machine tool controllers. Students will be able to operate the CNC vertical mills and CNC lathes in the lab after successful completion of this class. This class prepares students for the manual programming and advanced programming classes where students will be required to program, set-up and cut various parts. This course contains material previously taught in NCT 112.

NCT 120 Introduction to 2D CAD CAM Programming and Applications 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will learn CAD/CAM software to design parts for the various CNC manufacturing equipment. Points, lines, circles, view control, layers colors, break and trim functions will be used to create the geometry. Students will create both 2D and 3D geometry. The part geometry will be used to generate output files for various manufacturing equipment. Fundamental G and M codes will be reviewed to address machine specific requirements. This course contains material previously taught in NCT 249.

NCT 121 Manual Programming and NC Tool Operation 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4; MTT 102, NCT 101 and NCT 110, minimum grade "C"; NCT 101 and NCT 110, may enroll concurrently

30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This is the first in a two-course study of manual programming of CNC milling and turning centers. Students experience the entire process of part manufacturing by processing working drawings of sample parts, writing and editing of programs, set up and operation of CNC machine tools, and inspection of the finished products. Feeds and speeds, fixed cycles, program editing, set up procedures, and tape preparation are major topics presented. Laboratory time is required outside of class time. Students with experience equivalent to NCT 101 and NCT 110 may contact the instructor for permission to waive the prerequisites.

NCT 123 2D CAD CAM CNC Programming for Mills and Lathes 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NCT 120 minimum grade "C"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will use geometry creation skills to create tool paths for drilling operations, arc hole patterns, hole patterns, slotting, facing, contouring, and pocket milling. The CAM files will be posted to the vertical CNC machine tools to create milled parts. Lathe cycles such as facing, internal and external roughing, grooving, and threading will be used with the CAM software to produce parts on the CNC horizontal lathes. This course contains material previously taught in NCT 249.

NCT 174 NCT Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NCT 221; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

Students are placed in an approved industrial work experience to gain skills and knowledge offered by the employer. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two co-op courses.

NCT 221 Advanced Manual Programming and NC Tool Operation 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4; NCT 121 minimum grade "C"
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This is the second of a two-course study of manual programming and CNC Machine Tool Operation. Complex cutter path generation, cutter compensation, repetitive programming, multi-quadrant circular interpolation, three axis interpolation, threading macros, and other advanced programming techniques are practiced. Geometry creation using CAD/CAM software will be presented and used in this class. The class format is similar to that of NCT 121. Students with experience equivalent to NCT 121 may contact the instructor for permission to waive the prerequisite.

NCT 255 Probes, Macros and Conversational Programming for CNC 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NCT 121 and NCT 221, minimum grade "C"
Level II Prerequisites: Industry CNC machining experience may fulfill the NCT 121 and NCT 221 prerequisite
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students will learn the fundamentals of intuitive probing system (IPS) and visual quick code (VQC) for creation of probing cycles for CNC machine tools. The offset tool setter (OTS), the optical measurement probe (OMP) outputs and user defined inspection routines will be integrated into part programs. Students will setup and calibrate the OTS for various operational settings as well as understand the method for calibrating the OMP.

NCT 259 MasterCam 2D and 3D CAM CNC Programming for Mills 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NCT 221 minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students develop skills required to operate MasterCam software used to create 2D and 3D tool paths for milling operations. Basic understanding of file and menu structures for CAD and/or CAD CAM systems will be required for this class. Many of the menu selections, icons and tool pallet choices will be similar to those studied in the manual programming classes.

NCT 269 4 and 5 Axis Machining for the CNC Vertical Mills 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NCT 221 and NCT 259, minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students will develop skills required to setup 4 and 5 axis operations on CNC Mills. Students in this class will write manual code to position the 4th and 5th axis as well as use MasterCam software to generate 4 and 5 axis part geometry and tool paths for machining. Students will set-up and machine parts using the 4th and 5th axis programs.

NCT 274 NCT Co-op II 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NCT 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

Students are placed in an approved industrial work experience to gain skills and knowledge offered by the employer. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two possible co-op courses.

Nursing NUR

NUR 102 Fundamentals of Nursing 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Registered Nursing (APNURS) or Nursing Transfer program (APNURE); BIO 147 or BIO 237 minimum grade "C" (APNURS students); BIO 237 minimum grade "B" (APNURE students); BIO 212 and ENG 111; MTH 160 or MTH 167; COM 101 or COM 102 or COM 200; minimum grade "C" for BIO 212, COM, ENG and MTH courses
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students are introduced to nursing and the WCC nursing program. Foundational principles are explored for providing a safe and effective care environment, promoting health, maintaining psychosocial integrity and promoting physiological integrity. The nursing process and core components will be introduced as organizing frameworks for the nursing program. This course creates a foundation of evidenced-based nursing knowledge for the medical-surgical nursing courses and builds on knowledge gained in prerequisite courses. This course contains material previously taught in NUR 100.

NUR 106 Fundamentals of Nursing - Lab and Clinical Practice 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 102 minimum grade "C", may enroll concurrently
0 lecture, 120 lab, 60 clinical, 0 other, 180 total contact hours

In this course, students learn basic nursing procedures and rationales through lab discussion, lab practice, and clinical practice. Using the nursing process and core components as organizing frameworks, nursing skills are developed that provide a safe and effective care environment, promote health, maintain and promote psychosocial and physiological integrity. The student must successfully complete the lab discussion and lab skills check-outs before progressing into the clinical component, which takes place in an extended care setting. This course contains material previously taught in NUR 100 and NUR 103.

NUR 108 Nursing Concepts I 8 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Registered Nursing (APNURS) or Nursing Transfer (APNURE) program; BIO 147 and BIO 212, minimum grade "C"; and NUR 115 minimum grade "C+"; may enroll concurrently in BIO 147, BIO 212 and NUR 115
75 lecture, 90 lab, 45 clinical, 0 other, 210 total contact hours

In this course, students will apply foundational nursing concepts across the lifespan with an emphasis on late adulthood. The organizing framework for the nursing practice will be introduced including patient-centered care, teamwork and collaboration, safety and quality improvement, informatics and technology, evidence-based practice, and professionalism. Basic psychomotor and psychosocial concepts and skills will be practiced through clinical, lab and simulation.

NUR 115 Pharmacology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 111 minimum grade "B-"; BIO 212 minimum grade "C", may enroll concurrently; BIO 147 or BIO 237, minimum grade "C", may enroll concurrently; and MTH 160 or MTH 167, minimum grade "C" or Academic Math Level 3

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn basic principles of pharmacology with a strong emphasis on medication safety along with drug dosage calculations. Pharmacodynamics, pharmacokinetics, and pharmacotherapeutics of major drug classifications are discussed using a pathophysiological approach and then applied to patient situations. Drug contraindications, drug interactions, adverse effects, nursing management, and patient education are also discussed and then applied to patient situations. Anatomy and physiology is a course pre-requisite. This is a required course in the WCC Nursing Programs but may also be taken for transfer by any pre-nursing or nursing student.

NUR 122 Nursing as a Societal and Interpersonal Profession 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Nursing Transfer (APNURE) program; consent required

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course explores and introduces the scope of the nursing profession, with emphasis on the societal mandate for nursing, legal parameters of practice, critical thinking and interpersonal relationships and communication. Students will begin to develop the self as nurse. Possible career trajectories will be explored through interaction with faculty mentors and the development of a nursing portfolio.

NUR 123 Medical-Surgical Nursing I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 102 and NUR 115, minimum grade "C+"; NUR 106 with grade "P"

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students use the nursing process in the care of adults and their families during health and illness. Evidenced-based principles of nursing care for adults with common acute and chronic health problems are covered. This course builds on knowledge gained in prerequisite courses and is the first of three medical-surgical nursing courses. The title of this course was previously Acute Care Nursing I.

NUR 124 Medical-Surgical Nursing I - Clinical Practice 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 123 minimum grade "C+", may enroll concurrently

0 lecture, 15 lab, 75 clinical, 0 other, 90 total contact hours

In this medical-surgical clinical experience, students build on knowledge and basic skills from prerequisite courses. The lab component covers advanced nursing skills associated with the care of acutely ill adults. In the clinical component, the student begins to develop competency with time management and prioritization of patient care, while gaining an increased proficiency in assessment skills and medication administration. Using the nursing process, students learn to care for one (1) patient with moderately complex medical-surgical needs in the acute care setting. Pre-clinical assessment time is required prior to the scheduled clinical hours. The title of this course was previously Acute Care Nursing I - Clinical Practice.

NUR 128 Nursing Concepts II 8 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 147 and BIO 212, minimum grade "C"; NUR 108 and NUR 115, minimum grade "C+"; and PSY 206 minimum grade "C"; PSY 206 may enroll concurrently

75 lecture, 60 lab, 75 clinical, 0 other, 210 total contact hours

In this course, students will apply the nursing process to provide safe, quality nursing care for patients with common acute and chronic health problems across the lifespan, including care of the family during the uncomplicated childbearing experience. This course also includes clinical, lab and simulation in a variety of settings where students will apply informatics and technology for effective communication.

NUR 129 LPN Option 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 128 minimum grade "C+" and PSY 206 minimum grade "C"
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, students will examine the role of the practical nurse (LPN) with an emphasis on distinguishing the practical nurse's scope of practice in relation to clinical practice and other areas of nursing. Students will identify and recognize the practical nursing processes used in providing safe, quality care for patients with acute and chronic health problems across the lifespan. Successful completion of this course will prepare nursing students to register for the NCLEX-PN exam.

NUR 130 Health Promotion and Risk Reduction 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Nursing Transfer (APNURE) program and NUR 122 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students gain an understanding of the concepts of health, healthy behavior, health promotion, levels of prevention, diversity and risk; factors that influence health and healthy lifestyle behaviors; basic dynamics of behavioral change; and substantive content in nutrition, physical activity and psychological well-being. Theoretical and empirical support for promoting health and reducing risk behaviors are examined as a basis for understanding ways that diverse individuals can positively influence their own health and wellness. The role of professional nursing in promoting health behavior is examined. Using substantive content, exemplar behaviors of nutrition, physical activity and coping and adaptive behaviors will be examined from the student's perspective to gain an understanding of their contribution to health and wellness. Underlying dynamics, such as self-efficacy and resilience, will be examined in the context of the theoretical and empirical literature and standards for the nursing profession. Students will examine potential strategies for influencing health behavior change.

NUR 131 Nursing of the Childbearing Family 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 102 and NUR 115, minimum grade "C+"; NUR 106 with grade "P"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students use the nursing process to understand basic nursing care of the family during the childbearing process, including the antepartum, intrapartum, postpartum and normal newborn period. Topics concerning deviations from the normal maternity and newborn experience will be addressed. Perioperative nursing topics as applied to the childbearing family will also be included. This course builds on knowledge previously gained in prerequisite courses.

NUR 132 Nursing of the Childbearing Family - Clinical Practice 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 131 minimum grade "C+", may enroll concurrently
0 lecture, 15 lab, 75 clinical, 0 other, 90 total contact hours

In this course, students use the nursing process to provide care for the childbearing family within the lab and hospital settings. The focus of this course is to develop the students' ability to apply knowledge gained in Nursing of the Childbearing Family (NUR 131) to the planning, implementation, and evaluation of care for the antepartum, intrapartum, postpartum woman, her newborn, and family. Care of the perioperative patient is also included.

NUR 138 Nursing Concepts III 8 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 128 minimum grade "C+"; PSY 207 minimum grade "C"; and PHL 244 minimum grade "C"; PHL 244 may enroll concurrently
60 lecture, 90 lab, 90 clinical, 0 other, 240 total contact hours

In this course, students will use clinical judgment based on evidence and informatics to prioritize safe, quality care for patients with complex physical and mental health problems across the lifespan. Students will begin using delegation and leadership skills in managing their patient care assignments through clinical and simulation experiences in a variety of settings. Students will demonstrate professional conduct within current legal and ethical standards of practice.

NUR 222 Health Assessment Throughout the Lifespan 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 102 minimum grade "C"; NUR 106 with grade "P"; both courses may enroll concurrently

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students are provided the beginning knowledge needed to assess the health status of individuals from infancy through old age, including physical, developmental, psychological, cultural and spiritual dimensions. The laboratory experience, focused on the adult client, provides students the opportunity for skill acquisition in history taking, assessment skills and documentation of findings. Individuals holding an RN or LPN may request an override of the course prerequisites.

NUR 223 Medical-Surgical Nursing II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 123 and NUR 131, minimum grade "C+"; and NUR 124 and NUR 132, with grade "P"

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is the second course of the three-part medical-surgical nursing sequence that uses the nursing process to understand the care of adults and their families during health and illness. Evidence-based principles of nursing care for adults experiencing and adapting to health deviations in the following areas are covered: gastrointestinal, integumentary, nervous, musculoskeletal, reproductive, and immune. This course builds on fundamental and core knowledge gained in prerequisite courses. The title of this course was previously Acute Care Nursing II.

NUR 224 Medical-Surgical Nursing II - Clinical Practice 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 223 minimum grade "C+", may enroll concurrently

0 lecture, 15 lab, 75 clinical, 0 other, 90 total contact hours

In this medical-surgical clinical experience course, students build on knowledge and skills from previous courses, with emphasis on progressive development of technical skills, time management and prioritization/delegation of patient care. Using the nursing process, while applying evidence-based principles, students learn to care for two (2) patients with moderately complex medical-surgical needs in the lab and acute care settings. The title of this course was previously Acute Care Nursing II - Clinical Practice.

NUR 231 Nursing of Children 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 223 and NUR 255, minimum grade "C+"; and NUR 224 and NUR 256, with grade "P"

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students use the nursing process to focus on the care of children and their families during health and illness. Concepts learned in the previous semesters are applied to develop nursing interventions to care for this population. Principles of nursing care for children of all age groups experiencing health deviations and their adaptation to the stressors of hospitalization are addressed. Promoting health and fostering normal growth and development are emphasized.

NUR 232 Nursing of Children - Clinical Practice 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 231 minimum grade "C+", may enroll concurrently

0 lecture, 15 lab, 75 clinical, 0 other, 90 total contact hours

In this course, students use the nursing process to focus on care of hospitalized children and support of their families in the acute care setting. Students focus on incorporating growth and development assessment, as well as response to illness, into the development of nursing interventions appropriate for the specific child and family. Opportunities for interaction with the well child are provided. Pre-clinical assessment time is required prior to scheduled clinical hours.

NUR 248 Nursing Concepts IV 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 138 minimum grade "C+" and PHL 244 minimum grade "C"
45 lecture, 45 lab, 45 clinical, 0 other, 135 total contact hours

In this course, students will demonstrate clinical judgment in collaboration with the inter-professional team to prioritize safe, quality care for patients with multi-system and emergent health problems, including the high-risk childbearing experience. Students will expand their use of delegation and leadership skills in managing their patient care assignments through clinical and simulation experiences in a variety of settings. Students will expand their knowledge of psychomotor, affective, cognitive skills in managing their patient assignments through clinical and simulation experiences in a variety of settings.

NUR 255 Mental Health Nursing 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 123 and NUR 131, minimum grade "C+"; NUR 124 and NUR 132, with grade "P"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students use the nursing process to understand basic mental health nursing care for selected individuals in the hospital and community. The central focus is to help the student become more sensitive to human behavior and to act in a therapeutic manner. Disturbed patterns of coping, prevention of mental illness, and maintenance and restoration of mental health are discussed. This course builds upon knowledge gained in prerequisite courses.

NUR 256 Mental Health Nursing - Clinical Practice 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PSY 100 minimum grade "C" and NUR 255 minimum grade "C+", may enroll concurrently in both courses

0 lecture, 15 lab, 75 clinical, 0 other, 90 total contact hours

In this course, students use the nursing process to apply mental health nursing concepts for individuals and families in hospital and community settings. Students gain experience with current methods of prevention, maintenance and treatment when caring for at least two (2) moderately complex individuals with disturbed patterns of coping. Pre-clinical assessment time is required prior to and/or outside of the scheduled clinical hours.

NUR 258 Nursing Concepts Synthesis 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 138 minimum grade "C+"
Corequisites: NUR 248
15 lecture, 45 lab, 45 clinical, 0 other, 105 total contact hours

In this course, students will transition into professional nursing practice through preceptorships with professional nurses in a variety of clinical settings. Students will synthesize knowledge of nursing principles and concepts and begin to refine their professional nursing roles. Emphasis is placed on clinical reasoning and clinical judgment in the integration of care management for multiple, complex patients. Students prepare for the National Council Licensure Examination-Registered Nurse (NCLEX-RN).

NUR 283 Medical-Surgical Nursing III 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 223 and NUR 255, minimum grade "C+"; NUR 224 and NUR 256, with grade "P"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this third medical-surgical nursing course, the nursing process is used to understand the care of patients with moderately complex, multi-system needs and builds upon the principles of medical-surgical nursing. Additionally, this course will focus on prioritization and management of care, quality improvement and evidence-based practice (EBP) across the health continuum. This course builds on knowledge gained in prerequisite courses. This course contains material previously taught in NUR 271 and NUR 281.

NUR 284 Medical-Surgical Nursing III - Clinical Practice 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 223 and NUR 255, minimum grade "C+"; NUR 224 and NUR 256, with grade "P"

0 lecture, 45 lab, 90 clinical, 0 other, 135 total contact hours

In this capstone medical-surgical clinical experience, students transition into the role of a professional nurse, which includes the role of delegator and team leader. Using the nursing process, while integrating evidence-based principles, students manage care for three (3) patients with moderately complex medical-surgical needs in the lab/workshop and acute care settings. Experience is provided for each student to function collaboratively with members of the health care team. This course contains material previously taught in NUR 272 and NUR 282.

NUR 290 NCLEX-RN Preparation 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 231 and NUR 283, minimum grade "C+", both courses may enroll concurrently

15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, fifth semester nursing students receive assistance in preparing for the NCLEX-RN (National Council Licensure Examination for RNs). Emphasis is placed on reviewing learned materials using the Client Needs approach with a focus on multi-format style questions and on taking many NCLEX style exam questions. This course contains material previously taught in NUR 039.

Pharmacy Technology PHT

PHT 100 Introduction to Pharmacy and Health Care Systems 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Pharmacy Technology program; HSC 101 minimum grade "C", may enroll concurrently

Corequisites: PHT 103 and PHT 145

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course introduces students to our healthcare system and various pharmacy practice settings. The technician's role of assisting the pharmacist, maintaining the pharmacy and controlling inventory is emphasized. Students learn drug information skills, computerized pharmacy business practices and the application of the HIPPA. Discussion includes legal and ethical responsibilities and the importance of pharmaceutical organizations for the advancement of the pharmacy technician profession.

PHT 101 Pharmacology for Pharmacy Technicians 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHT 100, PHT 103 and PHT 145, minimum grade "C"

Corequisites: PHT 198

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

Students learn the purposes, actions, side effects, precautions and significant interactions of major drug classes with special attention on dosage forms and commonly used drug names. The student learns to describe the use of these agents in the management of disease states and their effects on body systems.

PHT 103 Pharmaceutical Calculations 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Pharmacy Technology program

Corequisites: PHT 100 and PHT 145

30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

Applications of pharmaceutical dosage calculation are presented in this course. Accuracy of calculations is stressed to assure that the patient receives the correct dose. This course prepares students for second semester laboratory and clinical course work.

PHT 106 Introduction to Pharmacy Technology 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

The course examines the role of the pharmacy technician in various pharmacy settings. It provides an overview of the educational requirements, the state law regarding delivery of pharmacy technician services, the role of the pharmacy technician as a member of the health care team, and the career opportunities for pharmacy technicians.

PHT 145 Prescription Processing and Compounding 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Pharmacy Technology program; ENG 111 and BIO 101 or higher BIO course; MTH 167 or MTH 169 or any math level 4 course or higher; minimum grade "C" in all courses
Corequisites: PHT 100 and PHT 103
0 lecture, 90 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students will be introduced to the pharmacy technician's role in the operation of a retail and hospital pharmacy. Students learn the generic and name-brands for the most dispensed medications and participate in practical exercises pertaining to prescription processing. In addition, students will gain hands-on experience in sterile and non-sterile compound product preparation. Emphasis is on aseptic technique and parenteral product preparation where students develop skills in the manipulation of parenteral drug products. This course contains material previously taught in PHT 140 and PHT 150.

PHT 174 PHT Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHT 100, PHT 101, PHT 103, PHT 145 and PHT 198; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated position related to their chosen field of study. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two possible co-op experiences courses.

PHT 198 Pharmacy Experience 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHT 100, PHT 103 and PHT 145, minimum grade "C"
Corequisites: PHT 101
0 lecture, 15 lab, 320 clinical, 0 other, 335 total contact hours

Skills attained in the first semester are applied in various pharmacy practice settings. All experience is under the supervision of a registered pharmacist. This class consists of a scheduled orientation and lecture component that guides the student for the clinical experience. During clinical experience, students will complete a minimum of 320 hours of clinical pharmacy practice as scheduled with the instructor and clinical site. Clinical is frequently offered as three full days per week. Expectations of clinical practice are available on the Pharmacy Technology page of the WCC website. This course is graded on a pass/no pass grading system.

PHT 274 PHT Co-op Education II 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHT 100, PHT 101, PHT 103, PHT 145, PHT 174 and PHT 198; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, the student gains skills from a new experience in an approved, compensated position related to the chosen field of study. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two possible co-op experiences.

Philosophy PHL

PHL 101 Introduction to Philosophy 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will examine the discipline of philosophy from a topical perspective. Major figures and concepts in this discipline will be studied in the context of central problems or issues in the history of philosophy. Issues or topics to be studied may include: the meaning of life, freewill and determinism, the mind-body problem, moral realism v. moral relativism, moral theory or the nature of moral judgment, metaphysics or the study of reality, epistemology or the study of knowledge, the question of the existence of God or ultimate reality as well as the rationality of religious belief.

PHL 123 Critical Thinking 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the principles of reasoning and how to use these principles in discourse and argumentation. Although students will be introduced to some basic deductive (formal) argument forms, the focus will be on inductive (informal) argumentation, since this is most prevalent in our contemporary discourses on topics such as those in philosophy, politics, law, ethics and religion. Additionally, students will be introduced to some of the practical and other benefits of critical thinking. Students will explore the many obstacles and hindrances that disrupt critical thinking and reasoned reflection, and, thus, the proper evaluation and construction of logically strong arguments will be explored in this way.

PHL 200 Existentialism 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Does life have meaning? Can values exist if God does not? This course considers the works of central existentialist figures such as Kierkegaard, Nietzsche, Sartre and Camus as well as related literary works. It addresses such themes as authentic existence, freedom, nihilism, meaning, subjectivity and values. The course is both an introduction to this body of work and an attempt to raise individual awareness of the human condition within which our existence takes place.

PHL 205 Ethics 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to the main tenets and justifications of at least four main classical ethical theories within the Western tradition, such as Ethical Relativism, Virtue Ethics, Natural Law Ethics, Deontological (Duty) Ethics, Utilitarianism, Social Contract Theory, and Care Ethics. Additionally, students will be introduced to how each ethical theory covered in the course answers some concrete moral questions differently.

PHL 240 Social-Political Philosophy 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to classical social-political philosophies such as Political Naturalism, Social Contract Theory, Marxism, Utilitarianism, Contemporary Political Liberalism, and Feminist Political Theory. The conceptions of human nature that underlie these theories and the forms of government that arise therefrom will also be discussed. Additionally, social-political issues such as economic justice, war, restrictions to liberty, unjustified discrimination, and environmental justice will be analyzed using at least four social-political philosophies.

PHL 244 Ethical and Legal Issues in Health Care 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to issues arising from the application of philosophical ethics or moral theory to the health care context. Different models of ethical decision-making will be used to examine current issues in health care. The course also provides an overview of legal theory and responsibility as it applies to the health care context with an emphasis placed on professional negligence. Topics to be discussed may include patients' rights, informed consent, confidentiality, medical research or experimentation, genetics, treatment of impaired newborns, end of life care, HIV/AIDS and moral/legal responsibilities toward colleagues.

PHL 245 Philosophy of Religion 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this introductory philosophy of religion course, students will be introduced to various forms and justifications of Theism, Atheism and Agnosticism, as well as to various accounts of the nature and purpose of God. Additionally, relationships that may hold between religion and other intellectual disciplines, such as, for example, ethics, epistemology, science, and psychology, are explored. The primary purpose of the course involves the critical examination both of the theoretical-philosophical justifications for various religious claims and beliefs, and of the philosophical problems and answers that arise therefrom.

PHL 250 Logic 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the discipline of philosophical logic. Emphasis will be placed on the distinction between deductive/formal reasoning and inductive/informal reasoning. With regard to the former, the course will examine different methods for the evaluation of deductive/formal arguments or reasoning. With regard to the latter, the course will again explore methods of evaluation, highlighting common mistakes in informal or everyday reasoning.

Photography PHO

PHO 101 Photography on Location 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 111 minimum grade "C-"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course studies methods and visual approaches of documenting and interpreting various locations with the camera. Emphasis is placed on making photographs on location and reviewing the results both on location and in critique. Students will learn to prepare equipment for location photography, review results on site and make photographs under special conditions. Locations and meeting times will vary by semester. Students are responsible for their personal transportation to locations; student carpools are encouraged.

PHO 103 History of Photography 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a survey of the history of photography as a technology and art form. Areas of investigation include historic and contemporary photographic processes, artistic trends and the social uses of the medium since its inception.

PHO 105 Digital Photography Abroad 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

This course offers students an opportunity to explore digital capture abroad. Through a series of on-location shoots, lectures, critiques and digital imaging demonstrations, students will create portfolios of photographs revealing their impressions of the chosen location and culture. Digital workflow issues will be addressed throughout the course. An online portfolio will be used as an integral part of the course to exhibit current work. Basic photographic and computer skills are required. Digital cameras will be available for use during the course or students may use their own.

PHO 109 Adobe Lightroom Book Project 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 111 minimum grade "D" or basic proficiency in Adobe Lightroom software
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, students learn to create a book of photographs using Adobe Photoshop Lightroom software. Students will assemble images, sequence them, determine an appropriate layout, select the size and paper for the book and output the book project to a PDF file and the finished book. The title of this course was previously Adobe Lightroom.

PHO 111 Photography I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is a comprehensive study of foundational photographic skills including digital single lens reflex (SLR) camera operation, composition, image organization, processing, and presentation skills. Cameras are available for check out through the WCC Photography Program to complete course assignments. Adobe Lightroom software is used for all image organization, processing and printing.

PHO 116 Studio Portraits 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 117 minimum grade "C-"
30 lecture, 0 lab, 0 clinical, 60 other, 90 total contact hours

In this intermediate level course, students are provided with the tools and techniques commonly encountered in a retail or commercial/editorial portrait studio. Students implement an expanded range of lighting techniques and strategies to produce photographs of people. A basic command of business forms and ethical issues surrounding the production and publication of these images is obtained. Students extend their imagery by means of implementing various digital retouching techniques that are specific to the genre of portraiture.

PHO 117 Introduction to the Studio 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 111 minimum grade "C-"
30 lecture, 0 lab, 0 clinical, 60 other, 90 total contact hours

This course is a comprehensive overview of the photographic studio workflow, inclusive of tungsten and strobe lighting systems. Students obtain a rudimentary command of techniques necessary to illuminate subject matter ranging from still life to portraits. Assignments investigate the technical and aesthetic issues encountered and resolved during the construction of images. Current computer hardware and software skills necessary to produce and manage images in a digital workflow are also garnered.

PHO 122 Film and Darkroom Photography 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 30 other, 60 total contact hours

In this course, students explore the craft of creating high-quality B&W negatives and darkroom prints. Students will learn to use manual 35 mm and medium format film cameras, process B&W film, and print using traditional darkroom methods and materials. Prior photography experience is not required. Cameras are available for student check out to complete the course. The title of this course was previously Darkroom Techniques.

PHO 127 Digital Photo Imaging I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 111 minimum grade "C-", may enroll concurrently
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students will be introduced to digital photographic imaging using Photoshop. Through a variety of hands-on assignments, students explore ways of working with photographs on the computer. Emphasis is placed on establishing solid foundation skills in digital photographic imaging such as resolution control, effective digital workflows, and print and web output options. PHO 111 must be taken as a prerequisite or concurrently.

PHO 129 Black and White Digital Imaging 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students explore a variety of methods and strategies for making monochrome and color-toned black and white images using digital processes. Students learn to optimize digital camera settings for black and white, optimize exposure and processing in Lightroom, Nik and Photoshop software applications, convert color images to monochrome, apply a variety of color and toning techniques and utilize modern printing technologies.

PHO 174 PHO Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
Level II Prerequisites: PHO 111
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

Students are placed in an approved industrial work experience to gain skills and knowledge offered by the employer. Together with the instructor and the employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experiences. This is the first of two possible co-op experiences.

PHO 204 Color Photo Design 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 111 and PHO 127, minimum grade "C-"; PHO 127 may enroll concurrently
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course concentrates on the visual aspects of design with color in photography. Topics include optical color, color theory, color relationships, emphasis with color, psychological effects of color and color control with Adobe Lightroom and Photoshop software. Students will print photographs using a color-managed workflow. This course was previously PHO 124.

PHO 210 Alternative Processes 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 111 and PHO 122, minimum grade "C"
30 lecture, 0 lab, 0 clinical, 45 other, 75 total contact hours

In this course, students will study an experimental approach to alternative photographic processes. Students employ processes such as pinhole photography, cyanotype, van dyke brown and lith printing to create new and exciting photographs. Students with experience equivalent to PHO 122 may contact the instructor for permission to waive the prerequisite.

PHO 211 Large Format Photography I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 111 minimum grade "C-"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the operation and use of 4x5 large format cameras. Students learn to load and process sheet film, print large format negatives in the darkroom, and scan and digitize negatives for inkjet output. Students also learn the use of perspective and depth of field controls of the camera through view camera movements. Topics include architectural, portrait, macro and landscape photography. Students will be loaned the use of a large format camera for the semester.

PHO 212 Large Format Photography II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 111 minimum grade "C-" and PHO 211 minimum grade "D"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students continue the exploration of the technical and visual components of large format photography, with a strong emphasis on developing a personal project. Demonstrations include the use of roll film adapters, formats other than 4x5, focus and perspective enhancement with view camera movements, contact printing, large print creation and the integration of digital technology with large format photography. Students are expected to develop an individual large format project in this course.

PHO 216 Environmental Portraiture 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 117 minimum grade "C-"
30 lecture, 0 lab, 0 clinical, 30 other, 60 total contact hours

This intermediate level course provides the tools and techniques commonly encountered when producing work for retail, editorial, or illustrative portraiture on location. Several unique lighting techniques and strategies are implemented to produce photographs of people. Emphasis is placed on preparing all necessary resources, inclusive of models, props, and wardrobe. A basic command of business forms and ethical issues surrounding the production and publication of these images is also obtained.

PHO 219 Photographic Design 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: PHO 111
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

This is an intensive review of photographic composition and design techniques with emphasis on design in the photographic image through lecture, demonstration, critique and darkroom practices. Included is a survey of contemporary photographers and new directions in modern photographic images and design.

PHO 220 Advanced Studio Techniques 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 117 and PHO 127, minimum grade "C-"; PHO 116 or PHO 216, minimum grade "C-", may enroll concurrently in PHO 116
30 lecture, 0 lab, 0 clinical, 30 other, 60 total contact hours

In this course, students will concentrate on advanced image construction techniques and the business issues relevant to their production. Students integrate their previous studio and imaging experiences with the pre- and post-production and critical thinking skills required to produce a job. Emphasis is placed on the business practices and ethical issues behind the creation of images for retail portraiture, commercial publication, and fine-art sectors of the industry.

PHO 227 Photojournalism 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 111 minimum grade "C-"
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

This course covers the fundamental principles of communicating newsworthy events, contemporary social issues and human interest stories through still photography. Students develop specialized shooting skills, and apply industry standards and ethics associated with photojournalism.

PHO 228 Digital Photo Imaging II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: PHO 127
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course provides an advanced level of investigation into digital photographic tools and techniques. Students will expand their understanding of digital input devices, photo imaging software and output devices. Students will be encouraged to work toward developing their own creative style. Students with experience equivalent to PHO 127 may contact the instructor for permission to waive the prerequisite.

PHO 230 Portfolio Projects 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 117 and PHO 228, minimum grade "C-"
Level II Prerequisites: PHO 122 or PHO 129, minimum grade "C-"
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

This course offers students the opportunity to work on an extended photographic project of the individual's choosing. Emphasis is placed on developing a personal style. Students improve their visual problem-solving skills through researching the technical and aesthetic concerns for their projects and through individual and group critiques. Recommended as a corequisite with Portfolio Seminar.

PHO 231 Portfolio Seminar 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 117 and 6 additional PHO courses 100 level or above; minimum grade "C-" all PHO courses

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is a capstone experience for students completing the photography program. Students will produce a professional portfolio, self-promotional materials and publish their portfolios on the Web. Professional critiques will be conducted on individual portfolios. Students will make contacts with potential employers, clients or transfer schools. PHO 230 may be taken concurrently by students seeking additional emphasis on the production of their final portfolios.

PHO 274 PHO Co-op Education II 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses.

Physical Education Activity PEA

PEA 115 Health and Fitness Experience .5 credit

Level I Prerequisites: No Basic Skills; Minimum of 18 years of age; Student must be enrolled in at least 3 other credit hours.
0 lecture, 0 lab, 0 clinical, 15 other, 15 total contact hours

Providing access to the Health & Fitness Center at Washtenaw Community College, this course encapsulates the benefits of regular and varied physical fitness activities. Students must be 18 years of age and enrolled in a minimum of 3 credits in the term of enrollment. This course may be repeated for credit five (5) times for a total of 3 credits.

Physical Therapist Assistant PTA

PTA 100 Fundamentals of Physical Therapy 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Physical Therapist Assistant program
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course serves as an introduction to the Physical Therapist Assistant Program and includes the historical overview of the physical therapy career, the role of the physical therapist assistant as a member of the health care team, and the scope of practice of the physical therapist assistant with emphasis on the State of Michigan's standards. It includes ethical behavior, interpersonal communication, patient motivation and basic documentation. Students are expected to relate health care observations and experiences to course materials and discussions.

PTA 102 Introduction to Physical Therapy 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, students examine careers in physical therapy with an emphasis on the physical therapist assistant. It includes an overview of the educational requirements, state law regarding delivery of physical therapy services, the responsibilities of the physical therapist and the physical therapist assistant and the career opportunities for the physical therapist and the physical therapist assistant. This course was previously HSC 102.

PTA 150 Therapeutic Procedures I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Physical Therapist Assistant program
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

This course introduces physical therapist assistant students to the fundamental skills of patient care and management under the direction and supervision of a licensed physical therapist. Students will learn to safely and appropriately apply these skills in various patient conditions. The development of clinical decision-making skills and time management during patient care activities are emphasized. Content includes, but is not limited to, infection control procedures, vital signs, bed mobility skills, proper body mechanics, range of motion activities, wheelchair management, transfer techniques and basic gait training skills.

PTA 160 Therapeutic Procedures II 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 150 minimum grade "C"
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This course provides the physical therapist assistant student with patient care and patient management skills for safe and appropriate use with patients. Lecture, demonstrations, lab practice and patient simulations will be used to develop decision-making and problem-solving skills with an emphasis on safety. Topics include wound management and muscle performance, but are not limited to, gait training with assistive devices, accessibility, pulmonary hygiene and orthotics and prosthetics.

PTA 180 Clinical Kinesiology 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Physical Therapist Assistant program
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students learn about human movement, including the principles of basic physics and biomechanics. Students examine the relationship of structures (skeletal, joint, neural, muscle) to function and examine normal and abnormal movement. Emphasis is on functional application to provide a foundation and rationale for therapeutic interventions necessary for the physical therapist assistant student. Laboratory experiences correlate to the lectures, which include the study of the head and trunk, extremities, posture and gait. This course contains material previously taught in PTA 180 and PTA 190.

PTA 195 Introduction to Disease 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 180 minimum grade "C"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course introduces the study of disease and disease processes in humans. Emphasis is on the impact on body systems, development and rehabilitation. Lecture and student presentations will describe diagnosis and pathology, treatment, medication, prognosis and implications for physical therapy treatment by the PTA under the direction and supervision of a licensed physical therapist.

PTA 198 Soft Tissue Management 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 220 minimum grade "C"
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This course applies and builds on the knowledge of human anatomy and clinical kinesiology and instructs the PTA student in the safe and appropriate use of soft tissue techniques. These include, but are not limited to, basic soft tissue massage and compression to be performed under the direction and supervision of a licensed physical therapist. Lecture, demonstration, lab practice and patient simulations will be used to develop problem-solving and technical skills needed for clinical application.

PTA 200 Therapeutic Modalities 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 180 minimum grade "C"
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This course introduces the physical therapist assistant student to the principles and skills necessary for the safe and appropriate administration of physical therapy modalities under the guidance and direction of a licensed physical therapist. Correlating lecture and laboratory experience topics will include therapeutic heat and cold, and select physical agents and modalities.

PTA 220 Therapeutic Exercise I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 180 minimum grade "C"
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This course introduces the PTA student to the theory, principles and procedures of therapeutic exercise providing the basis for safe and appropriate selection, administration, monitoring and adjustment of exercise programs (including balance, strengthening and posture). Students develop a rationale for the selection and use of basic exercise equipment and practice the development, selection and progression of goal-directed therapeutic exercise programs as well as monitoring and documenting patient performance and response. Laboratory activities correlate with lecture topics and include practice, patient simulations, and demonstrations.

PTA 225 Therapeutic Exercise II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 220 minimum grade "C"
Corequisites: PTA 198 and PTA 240
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This course continues the study and application of theory, principles and procedures necessary for patient treatment using goal-directed exercise as a treatment modality, under the direction and supervision of a licensed physical therapist. General exercise as well as exercise for specific populations and diagnoses will be included. Students will practice instruction, progression and justification of exercise programs as well as monitoring and documentation of patient response and/or simulated patient interaction. Laboratory activities will correlate with lectures and will include practice, patient simulations and demonstrations.

PTA 230 Clinical Education I 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 220 minimum grade "C", may enroll concurrently
0 lecture, 0 lab, 48 clinical, 0 other, 48 total contact hours

This course provides the qualified physical therapist assistant student with the opportunity to observe and participate in structured and supervised experiences in health care settings. Students will be placed by their program clinical education coordinator in off-site locations and given limited opportunity to safely and appropriately apply therapeutic interventions. This initial clinical experience will also provide the background and foundation for future coursework. This course is graded on a pass/no pass grading system.

PTA 240 Clinical Education II 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 230 with grade "P"
0 lecture, 0 lab, 120 clinical, 0 other, 120 total contact hours

This second clinical experience provides the qualified physical therapist assistant student with supervised clinical learning experiences and the opportunity to further develop and practice necessary clinical decision-making, treatment and documentation skills. Students will be assigned to varied off-site health care settings for 3 weeks, 40 hours/week, under the supervision of a licensed PT or PTA from an accredited two-year program. This course is graded on a pass/no pass grading system.

PTA 250 Clinical Education III 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 240 with grade "P"
0 lecture, 0 lab, 480 clinical, 0 other, 480 total contact hours

This third clinical experience consists of full-time clinical placements in off-site health care settings. Qualified physical therapist assistant students will perform activities of supervised patient care, documentation and family instruction, acting as a member of the health care team with the purpose of achieving entry-level competency. This course is graded on a pass/no pass grading system.

PTA 280 Clinical Concepts 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 240 with grade "P"
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course reviews and builds upon classroom and clinical education experiences to examine ethical considerations in patient care relationships, communication between Physical Therapists and Physical Therapist Assistants, preparation for employment, professional growth after graduation, departmental organization and critical review of published research.

Physics PHY

PHY 100 Physics for Elementary Teachers 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 30 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students study the basic laws governing the physical universe. This course helps prospective educators learn to explain everyday physical phenomena in elementary terms. Prospective educators will also learn to select materials and provide instruction for hands-on activities that help students construct a picture of our physical universe.

PHY 105 Conceptual Physics 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

Designed for both transfer and vocational students with no previous physics experience, but desiring a working knowledge of physics, Physics 105 surveys the major topics of Newtonian mechanics, heat, vibration and waves, electromagnetism and light using a conceptual approach with a minimum of mathematics.

PHY 110 Applied Physics 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

Technical-vocational students with no previous experience with physics should take this course to fulfill their program requirements. Topics covered are: mechanics (kinematics, forces and torque, work-energy, machines), static fluids and properties of matter and heat. Laboratory exercises give students an opportunity to test theoretical principles.

PHY 111 General Physics I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 7; or Academic Math Level 5 and MTH 178 or MTH 180, minimum grade "C" in math courses, may enroll concurrently in either course
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This is the first of a two-course sequence in algebra-trigonometry based Newtonian physics for pre-professional and liberal art students. Physics 111 introduces and develops the concepts of kinematics, forces, work-energy, impulse-momentum (translational and angular), fluids, vibration and waves and heat. Laboratory exercises are included to assist students in understanding the above topics.

PHY 122 General Physics II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHY 111 minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is the second part of a two-course sequence in algebra-trigonometry based physics for pre-professional and liberal arts students. It covers the concepts of electricity, magnetism, light and modern physics extending the students' knowledge of physics learned in the prerequisite course. Laboratory exercises are included to assist students in understanding the above topics.

PHY 211 Analytical Physics I 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; high school physics or PHY 111; MTH 191, minimum grade "C" all MTH, PHY and high school requirements
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

This is the first of a two-course sequence in calculus-based Newtonian physics for students intending to major in science or engineering. Physics 211 develops the concepts of mechanics (kinematics, forces, work-energy, impulse-momentum, translational and angular, fluids), vibration (and waves) and fundamental thermodynamics. Laboratory exercises are included to assist students in understanding the above topics and to develop skills in data analysis methods.

PHY 222 Analytical Physics II 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHY 211 minimum grade "C"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

This course is the second part of a two-course sequence in calculus-based physics for students majoring in science and engineering. Students will cover the concepts of electricity, magnetism, light and modern physics. Laboratory exercises are included to assist students in understanding these topics and to develop skills in data analysis methods.

Political Science PLS

PLS 112 Introduction to American Government 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This class studies the forms and functions of American government with emphasis on national government. The decision-making process in Congress, the Presidency and the federal court system are studied. The course also examines the relationship of political parties and public opinion to the electoral process.

PLS 150 State and Local Government and Politics 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Non-federal (state and local) governments will be examined in this course. Special emphasis on the governments of Michigan and Washtenaw County provides for an investigation of the challenges of decision-making and governance in addressing the immediate needs of its citizens.

PLS 211 Introduction to Comparative Government 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This class surveys the political systems of Great Britain, France, Italy, Germany, the former Soviet Union and China. It is recommended that students take one course from the ANT, GEO, HST or PLS disciplines or contact the instructor for permission before registering for this course.

PLS 220 Politics and the Media 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PLS 112 minimum grade "C-"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to the role of the mass media in the political process. It critically examines the role of the mass media in shaping American political life, focusing on the historical development of the mass media in American society, the economic and political forces that shape news coverage of political leaders and institutions, the influence of the mass media on the American public and normative assessments of how well the media promotes public deliberation in a democracy.

PLS 241 Guns, God and Ganja: U.S. Federalism 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this federalism course, students examine the relationship between the U.S. Constitution, state and federal lawmaking, and citizen initiatives. Topics will include the ownership and regulation of guns, the impact of religion relative to abortion and LGBT rights, and state and federal law regarding marijuana and the legalization of drugs. The 2nd and 14th Amendments, and Articles 4, 5, and 6 of the U.S. Constitution will be explored.

PLS 250 Campaigns and Elections 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to campaigns and elections in the United States. The purpose is to provide students with an intellectual understanding and practical working knowledge of the electoral process. The course will examine key actors in the electoral system: candidates, parties, interest groups, voters and the mass media. Although the focus will be on national elections, both congressional and presidential, state and local elections will also be examined. This course will provide students with the knowledge that will equip them to become more informed and effective citizens in the electoral process.

PLS 260 Introduction to Political Thought 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PLS 112 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course presents an overview of political thought, or theory, from the early Greeks through the 19th century works of Marx, Mills and Thoreau. The focus will be on the evolution of political thought as well as the different objectives and values that have driven the quest for the "ideal" form of government.

PLS 290 American Power in the 21st Century 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students examine the ways in which policy decisions by the United States will influence its place in the world in coming decades. Sources of American power will be considered along with ethical considerations surrounding the use of this power. The role of American power will be applied to issues such as globalization, terrorism, economic development, and environmental degradation.

Psychology PSY

PSY 100 Introduction to Psychology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This class provides an introduction to the scientific study of psychology - the study of mental processes and behavior. This is a survey course including such topics as psychological development, learning, thinking, motivation, emotion, perception, intelligence, aptitudes and personality. Basic principles and their practical applications are discussed.

PSY 107 African - American Psychology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is organized around the premise that there is a distinctive Afro-American psychological frame of reference that is evident in the behavior and lifestyles of African Americans. This course aims to build a conceptual model to help analyze and explain the psychological behavior of African Americans.

PSY 150 Psychology of Work 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides knowledge, tools and experiences to facilitate students entering an organization and comprehending their role in it. Students will learn about the interdependency of the organization and the individual. The foundation of this course is based in Organizational Development, I/O Psychology, General Psychology, Social Psychology and Personality Theory.

PSY 200 Child Psychology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students receive an overview of the psychology of human behavior from conception to adolescence. It includes the study of psychological processes involved in physical, cognitive and social personality development. Major theories of human development are reviewed and contrasted. The course is constructed and taught to be of value to those entering the fields of social work, elementary or secondary education, or nursing and various allied health fields.

PSY 206 Life Span Developmental Psychology 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are provided with an overview of the biological, cognitive, social and affective domains of human growth and development from the prenatal period until death. The course emphasizes the relationship of growth and development to behavior through the life span. Major theories of human development, as well as research methods, are reviewed and contrasted. The course is especially constructed and taught to be of value to those entering the fields of social work, elementary or secondary education, or nursing and various allied health fields.

PSY 210 Behavior Modification 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HSW 100 or PSY 100
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to basic behavioral principles and their applications to individuals in need of behavior intervention (i.e., mentally ill, developmentally delayed, problems with daily living, and general behavioral struggles). Students will learn to recognize and interpret behavior patterns, recall the impact of different intervention strategies and determine an effective behavioral modification plan. Students will be asked to design, implement and evaluate the impact of a personal behavioral modification plan.

PSY 220 Human Development and Learning 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course covers developmental topics including cognitive, psychological and social development from birth through adolescence. Primary focus is on the role of parents and teachers in fostering learning and development. The topics of readiness to learn, windows of opportunity, brain-based teaching and learning techniques, learning theory, classroom management and planning and assessment of learning outcomes are addressed.

PSY 240 Drugs, Society and Human Behavior 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides an overview of the use and abuse of legal and illicit drugs from a psychological perspective. The course covers the prevalence of use and abuse of psychoactive drugs, both historically and currently; the physiological mechanisms of action of different categories of psychoactive drugs; the individual and societal determinants and consequences of drug use; and the relevance of these issues to prevention and treatment programs. It is recommended that PSY 100 and/or BIO 102 be taken before or concurrently with this course. This course contains material previously taught in PSY 130.

PSY 251 Education of Exceptional Children 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are presented with an overview of the major categories of exceptionality. Methods for identifying and working with children in child care, recreational and educational settings are explored. Working with an interdisciplinary team and partnering with parents is a major focus. A working knowledge of resources, a comfort level for working with exceptional children and their families, and exploring the roles of professionals who work with exceptional populations are stressed.

PSY 257 Abnormal Psychology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PSY 100 minimum grade "C-"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to abnormalities in personalities types, their origin, symptoms, developments, prevention and treatment. Main topics include: simple maladjustment, disturbances of emotion, perception, memory, judgment or thought. Other topics may include early symptoms of schizophrenia and disorders of mobility and speech.

PSY 260 Introduction to Human Sexuality 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides a survey of the psychological research concerned with human sexuality. Areas presented include: research, anatomy, dysfunctions and their treatment, family planning methods, sexual communication, sexually transmitted diseases and sexual variation.

PSY 270 Social Psychology and Global Applications 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to the major concepts in the field of social psychology, the way in which our thoughts, behaviors, and emotions are influenced by the presence of others. As each major topic within social psychology is reviewed, students will focus on its application to political and historical events throughout the world. Students will be able to use this knowledge in understanding social relationships at both the local and global level.

PSY 296 Neuropsychology of Addiction 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students explore the relationship between the physiological makeup of the body and its impact on the addictive nature of drugs and alcohol. By the end of this course, students will have a strong understanding of how neurotransmitters and the chemical makeup of the brain are influenced by drugs. Students explore the role that stimulants, depressants, and hallucinogenics play in altering brain chemistry, the impact of withdrawal, and the basic concepts of detoxing. In addition, students will be introduced to different classifications of prescription medications used in treating mental illness.

PSY 297 Assessment of Co-occurring Disorders 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students receive an overview of tools used to assess the co-occurrence of mental illness and substance abuse. Students are introduced to basic mental illness concepts presented in the current Diagnostic and Statistical Manual (DSM) and explore the influence and interaction of substance abuse related to mental illness. In addition, students will be provided with ethical guidelines related to working with assessing and treating addiction.

PSY 298 Treatment of Addiction 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this capstone course, students will integrate theory into the practice of treating addictions. Students will apply the theoretical foundations to treating addiction and learn about possible barriers associated with treatment. By the end of this course, students should have a basic understanding of treatment options and begin to demonstrate the skills used with each option.

Radiography RAD

RAD 100 Introduction to Diagnostic Imaging 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course is a prerequisite for admission to the radiography program. The purpose of this course is to provide an overview of diagnostic medical imaging modalities with emphasis on the role of the radiologic technologist in the healthcare delivery system. Topics include historical development of radiological sciences, professionalism, career development, organization of healthcare systems, introduction to radiographic equipment, procedures, radiation protection and medicolegal issues.

RAD 101 Methods in Patient Care 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Radiography program
15 lecture, 15 lab, 0 clinical, 0 other, 30 total contact hours

This course is designed to teach the student how to therapeutically communicate with patients. Students will also learn to assess a patient's condition and how to provide quality patient care. This course will include laboratory sessions which will teach the patient care skills that are within the scope of practice for a radiologist technologist, i.e. vital signs, blood pressure, venipuncture, airway management; patient transfer and immobilization techniques; infection control practices; aseptic and non-aseptic techniques.

RAD 103 Medical Professionalism in Clinical Radiography 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Radiography program
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course is an introduction to clinical education, clinical supervision, and professionalism in the medical imaging settings. Topics include patient privacy and information confidentiality, professional behavior, student clinical skill performance and assessment, and the Clinical Instructor-student dynamic.

RAD 110 Clinical Education 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 101 minimum grade "C-"
0 lecture, 0 lab, 240 clinical, 0 other, 240 total contact hours

This course provides structured clinical experience in the application of knowledge and skill in positioning the upper extremity, chest and abdomen; and demonstration of knowledge concerning professional ethics, courtesy and empathy in handling patients, film processing/imaging plate (IP) handling and image archiving and radiographic equipment.

RAD 111 Fundamentals of Radiography 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Radiography program; RAD 100 minimum grade "B-"

15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to prepare students to operate radiographic equipment in the clinical setting. Students will acquire the knowledge and skills needed to operate basic fixed and mobile x-ray equipment and accessory devices that are used to produce quality diagnostic radiographic images. This course will include laboratory sessions which will integrate the theories of image production with the practical application of equipment operation.

RAD 112 Radiographic Positioning I 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 101 and RAD 110, minimum grade "C-"; RAD 110 may enroll concurrently

15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

This course presents the theories and practices that are utilized in the clinical setting to produce diagnostic radiographs of the chest, abdomen and upper extremity. Radiographic terminology, patient preparation, patient positioning, proper manipulation of radiographic equipment, radiation safety practices, image evaluation, professional standards and medical ethics will be discussed and practiced in the laboratory setting.

RAD 120 Clinical Education 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 110 minimum grade "C-"

0 lecture, 0 lab, 240 clinical, 0 other, 240 total contact hours

This course provides structured clinical experience in the application of knowledge and skill in positioning the spinal column, lower extremities and related anatomy. This course continues the discussion of professional ethics, courtesy and empathy in handling patients, radiation safety, film processing/imaging plate (IP) handling and image archiving and radiographic equipment.

RAD 123 Radiographic Positioning II 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 112 and RAD 120, minimum grade "C-"; RAD 120 may enroll concurrently

15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

This course presents the theories and practices that are utilized in the clinical setting to produce diagnostic radiographs of the lower extremity, vertebral column and bony thorax. Radiograph terminology, patient preparation, patient positioning, proper manipulation of radiographic equipment, radiation safety practices, image evaluation, professional standards and medical ethics will be discussed and practiced in the laboratory setting.

RAD 124 Principles of Radiographic Exposure 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 101 minimum grade "C-"

30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This course is a continuation of material presented in RAD 111. The content of this course includes a comprehensive study of atomic theory, radiographic exposure technique, image production using analog and digital mediums, and the appropriate use of radiographic accessory devices. Students will learn theoretical principles for achieving optimal image quality and techniques for reducing patient radiation exposure. Laboratory sessions are included to provide a means of integrating theory with practical applications for use in the clinical setting. This course contains material previously taught in RAD 127.

RAD 125 Radiographic Procedures and Related Anatomy 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 110 minimum grade "C-", may enroll concurrently

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to teach the student how to obtain quality images of the gastrointestinal system, accessory organs, urinary system and other special procedures associated with radiography. Students will also learn practical applications of contrast media and the appropriate use of fluoroscopic equipment and imaging accessories.

RAD 150 Clinical Education 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 120 minimum grade "C-"
0 lecture, 0 lab, 384 clinical, 0 other, 384 total contact hours

This course provides structured clinical experience in the application of knowledge and skill in positioning the chest and thorax, abdomen, spinal column, upper and lower extremities and related anatomy while working in general, portable and fluoroscopic radiography. The course also provides students with an opportunity to learn and demonstrate professional ethics, courtesy and empathy in handling patients, radiation safety, film processing/imaging plate (IP) handling and image archiving and radiographic equipment manipulation.

RAD 190 Physical Foundations of Radiography 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 110 minimum grade "C-"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers the theoretical and practical application of radiation physics with an emphasis on electromagnetic radiation, electricity, magnetism, x-ray circuitry, radiation production and radiation's interaction with matter. This course was previously RAD 200.

RAD 215 Radiography of the Skull 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 110 and RAD 120, minimum grade "C-"; RAD 120 may enroll concurrently
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn how to obtain quality radiographic images of the skull. Students will also be able to critically analyze the radiographic images of the skull and identify the pertinent anatomy. Laboratory sessions are included to provide the student with experience in skull positioning.

RAD 217 Clinical Education 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 150 minimum grade "C-"
0 lecture, 0 lab, 336 clinical, 0 other, 336 total contact hours

This course provides structured clinical experience in the application of knowledge and skill in positioning the skull and related anatomy. This course continues the discussion of professional ethics, courtesy and empathy in handling patients, radiation safety, film processing/imaging plate (IP) handling and image archiving and radiographic equipment.

RAD 218 Radiation Biology and Protection 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 120 minimum grade "C-"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will present the principles of radiobiology and radiation protection. Students will analyze the basic theories of the biological, genetic and somatic effects of radiation on human cells and tissue and learn the current radiation protection standards and practices used in the healthcare setting to protect themselves, patients and others from exposure to radiation.

RAD 222 Pharmacology in Diagnostic Imaging 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 150 minimum grade "C-", may enroll concurrently
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students are provided with an introduction to pharmacology and contrast media administration as it relates to the medical imaging profession. Students gain an understanding of diagnostic contrast media and the effects of these agents on the human body. Students also receive instruction in basic techniques of venipuncture, appropriate patient care practices during drug administration and management of medical emergencies in the diagnostic imaging department.

RAD 223 Sectional Anatomy 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 217 minimum grade "C-"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course will present an introduction to sectional anatomy. Students will learn the basic protocols for obtaining and analyzing sectional images. The sectional anatomy of the head, neck, chest, abdomen, pelvis, spine and joints will be studied.

RAD 225 Clinical Education 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 217 minimum grade "C"
0 lecture, 0 lab, 336 clinical, 0 other, 336 total contact hours

This course provides continued structured clinical experience in the application of knowledge and skills for positioning the upper and lower extremities, chest, abdomen, spinal column and skull during contrast studies, surgical procedures and portable radiography. Students will demonstrate their mastery in the design and operational characteristics of equipment and accessories in diagnostic radiography.

RAD 232 Digital Imaging in Radiography 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 190 minimum grade "C-"
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the physical principles of digital radiography imaging systems. Topics include digital image acquisition processing, the effective use of exposure factors for digital image receptors (computed radiography and flat-panel digital radiography), imaging physics of digital fluoroscopy and mammography, and quality control for digital radiographic equipment. The principles of image display, archiving, and retrieval commonly used for Picture Archiving Communication Systems (PACS) will also be presented.

RAD 235 Pathology for Radiographers 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 150 minimum grade "C-"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a study of pathological imaging to include respiratory, gastrointestinal and accessory organs, genitourinary, skeletal, cardiovascular, and nervous systems. This course will investigate the etiology, signs, symptoms, and primary methods of diagnosis. An emphasis is placed on radiologic visualization of pathological conditions. This course was previously RAD 135.

RAD 240 Clinical Education 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 225 minimum grade "C-"
0 lecture, 0 lab, 224 clinical, 0 other, 224 total contact hours

This course provides structured clinical experience in the application of knowledge and skill in positioning the chest and thorax, abdomen, spinal column, skull, upper and lower extremities and related anatomy while working in general, portable and fluoroscopic radiography. The course also provides students with an opportunity to learn and demonstrate professional ethics, courtesy and empathy in handling patients, radiation safety, film processing/imaging plate (IP) handling and image archiving and radiographic equipment manipulation.

RAD 259 Introduction to Computed Tomography (CT) Instrumentation and Protocols 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Computed Tomography (CT) program
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This is a course for certified technologists, ARRT (R), ARRT (N), ARRT (T), and (CNMT), who are admitted to the computed tomography (CT) program. An overview of the major components of a computed tomography (CT) scanner, how they work, their function, and the technologists interface with them, and the basic scanning protocols common to CT imaging will be presented.

RAD 261 Patient Care in Computed Tomography (CT) 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Computed Tomography (CT) program
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This is a course for certified technologists, ARRT (R), ARRT (N), ARRT (T), and (CNMT), who are admitted to the computed tomography (CT) program. The theory and practice of the basic techniques of venipuncture and the administration of contrast media for computed tomography (CT) procedures will be presented. Other topics include patient care, education, and management protocols for CT procedures.

RAD 262 Principles of Computed Tomography (CT) 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Computed Tomography (CT) program
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This is a course for certified technologists, ARRT (R), ARRT (N), ARRT (T), and (CNMT), who are admitted to the computed tomography (CT) program. The history of computed tomography, equipment design and function, and the basic fundamentals of CT scanning will be presented.

RAD 263 Practical Computed Tomography (CT) Imaging 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Computed Tomography (CT) program; RAD 259 and RAD 261, minimum grade "C"; may enroll concurrently in both courses
Corequisites: RAD 265
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is a course for certified technologists, ARRT (R), ARRT (N), ARRT (T), and (CNMT), who are admitted to the computed tomography (CT) program. Computed tomography (CT) scanning protocols, patient care, and related pathology will be covered.

RAD 265 Computed Tomography (CT) Clinical Education I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Computed Tomography (CT) program
Corequisites: RAD 263
0 lecture, 0 lab, 360 clinical, 0 other, 360 total contact hours

This is the first clinical course for certified technologists, ARRT (R), ARRT (N), ARRT (T), and (CNMT), who are admitted to the computed tomography (CT) program. Students will apply knowledge and skills learned in the classroom to the performance of computed tomography (CT) procedures in the clinical setting. Students are expected to gain practical experience and demonstrate competency in the area of CT protocols and parameter, equipment operation, quality control, and image critique. This course requires a 15 week, 24-hours/week clinical rotation under the supervision of a certified computed tomographer.

RAD 266 Advanced Computed Tomography (CT) Imaging 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 265 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is a course for certified technologists, ARRT (R), ARRT (N), ARRT (T), and (CNMT), who are admitted to the computed tomography (CT) program. Advanced computed tomography (CT) techniques, including the principles and application of 3D imaging will be discussed.

RAD 267 Computed Tomography (CT) Clinical Education II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 265 minimum grade "C"
0 lecture, 0 lab, 360 clinical, 0 other, 360 total contact hours

This is the second clinical course for certified technologists, ARRT (R), ARRT (N), ARRT (T), and (CNMT), who are admitted to the computed tomography (CT) program. Students will complete all documentation and competency training necessary to sit for the American Registry of Radiologic Technologists (ARRT) computed tomography certification examination. Students will be assigned to a health care facility for 15 weeks, 24 hours/week (360 clinical hours), under the supervision of a certified technologist.

RAD 270 Principles of Mammography 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Mammography program
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is the first course in the mammography program for certified radiologic technologists. The history of mammography and a comprehensive review of breast anatomy, physiology, mammographic positioning protocols, specialized mammographic procedures and breast pathology will be presented.

RAD 271 Mammography Quality Control (QC) 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Mammography program; RAD 270 minimum grade "C", may enroll concurrently
Corequisites: RAD 273
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is the second course in the mammography program for certified radiologic technologists. Topics include physics, instrumentation, quality assurance, and quality control of analog and digital mammography imaging systems. The regulations established under the Mammography Quality Standards Act (MQSA) will also be presented. The title of this course was previously Mammography Procedures and QA.

RAD 273 Mammography Clinical Education 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Mammography program; RAD 270 minimum grade "C", may enroll concurrently
Corequisites: RAD 271
0 lecture, 0 lab, 360 clinical, 0 other, 360 total contact hours

In this course, the certified radiologic technologist receives a structured and supervised clinical experience. Students will apply knowledge and skills learned in the classroom to the performance of mammographic examinations. Students are expected to gain practical experience and demonstrate competency in the area of patient positioning, breast examination, equipment operation, quality control, and image critique. Students will be assigned to a health care facility for 15 weeks, 24 hours/week, under the supervision of a certified mammographer.

RAD 290 International Studies in Radiography 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 120 minimum grade "C-"
0 lecture, 60 lab, 0 clinical, 0 other, 60 total contact hours

This course offers students in radiography the opportunity to use their radiography training in a new and exciting venue. Each year, students will travel to Peru to do field work and research on mummies, human and animal bones, pottery and other artifacts. The students will have the opportunity to compare cultural differences between Peru and the United States. The students will visit various historical sites within Peru.

Robotics ROB

ROB 101 Robotics I - I 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This is the first course of the robotics series. It is a beginning level course where students are exposed to various aspects of industrial robots and automated manufacturing. Studies include an introduction to hands-on programming using industrial robotics. This course contains material previously taught in ROB 121. ROB 101 is generally offered in the first 7 1/2 week session.

ROB 110 Robotics I - II 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ROB 101 minimum grade "C", may enroll concurrently
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This course continues the robotic series and includes additional information on the types of robots, application of flexible automation, tooling and various types of sensors and their operation. Integrating the use of inputs and outputs (I/O) and counters into structured robot programs is also covered. Field trips to local manufacturing firms that use robotic equipment will help the students understand and witness concepts presented in class. This course contains material previously taught in ROB 121. ROB 110 is generally offered in the second 7 1/2 week session.

ROB 174 ROB Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two possible co-op experiences.

ROB 212 Robotics II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ROB 101 and ROB 110
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This class concentrates on programming techniques for industrial robots. Students learn to program different types of robots incorporating inputs and outputs into their programs. The course is based on a series of student projects that, step by step, introduce each new command or concept. Students spend most of the class time in the lab and are expected to spend extra hours during scheduled open labs. Students with experience equivalent to ROB 101 and ROB 110 may contact the instructor for permission to waive the prerequisite.

ROB 222 Robotics Simulation 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Corequisites: ROB 223
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This course provides an introduction to Robotic Simulation using the IGRIP software. Students learn how to build computer simulated models of robotic workcells. Programming and running these simulations are also covered. Hands-on use of the software is an integral part of the course.

ROB 223 Robotics III 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ROB 212
Corequisites: ROB 222
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

Students learn to work with peripheral devices in various robotic workcells. Labs include part recognition, sorting, counting, measuring and palletizing. Programmable controllers are used to interface robots with other automated equipment. Students are introduced to automated conveyors, vision systems, bar coding and automated welding. It is recommended that students complete ELE 224 Programmable Controllers before taking this course.

ROB 274 ROB Co-op Education II 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ROB 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses.

Science SCI

SCI 101 The Nature of Science 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course allows students to acquire an appreciation of the importance of the natural sciences to everyday life. The emphasis is on science as a way to evaluate the validity of scientific information in the media and on the Internet. The goal is for students to apply the basic laws, concepts, and themes that underlie our natural world in order to place important public issues such as the environment, energy and medical advances in a scientific context.

SCI 102 Applied Science 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Member of the United Association
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

This course prepares members of the pipe trades to accurately apply principles of physics to their work. Five major areas are studied: water and steam; hydraulics and pneumatics; mechanics; metals, alloys, synthetics; and corrosion. Within each of these areas, apprentices will develop their understanding of the concepts underlying the various aspects of their trade so that they can perform to accepted standards. This course is open only to apprentices in the United Association.

Sociology SOC

SOC 100 Principles of Sociology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students examine the foundation of sociology as the basis of group behavior in a society, which includes topics such as social interaction, social control, social inequality, as well as social change. Emphasis is placed on the impact of social institutions on the self.

SOC 202 Criminology 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

An examination is provided of the theories which attempt to explain criminal behavior. Punishment versus rehabilitation schools of thought is dealt with as well as capital punishment. Attention is also given to the functioning of police and the court system.

SOC 205 Race and Ethnic Relations 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students examine the social and historical development of racial and ethnic stratification, and the legacy of inter-group conflict, racism and discrimination. It covers sociological approaches to understanding the patterns of ethnic relations in the United States and other countries. Additionally, it analyzes the complex nature of social, economic and power inequalities stemming from the intersection of social class, religion and gender within and among racial-ethic groups.

SOC 206 Introduction to Gender Studies 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the main issues confronting women today. Topics such as patriarchy and oppression, media images, violence, work, and sexuality are covered. Feminism and the commonalities and differences of women from different racial/ethnic and class backgrounds will be discussed. Gender and women's rights, as they relate to political, social and legal systems, will be examined.

SOC 207 Social Problems 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course examines social problems which affect societies and the lives of the people who live in them. Emphasis is placed on a theoretical analysis of social problems as well as the historical and current events from which these social problems arise.

SOC 216 Introduction to Gender and Sexuality Studies 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to the way society constructs gender and sexual identity, as well as the way gender and sexuality shape our understanding of the world and ourselves. Topics will include femininity and masculinity, as well as lesbian, gay, bisexual, transgender history and experience.

SOC 220 Group Dynamics and Counseling 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HSW 100 or SOC 100, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces the student to using small groups to promote change. Group dynamics and developmental theory are studied in depth. Concepts such as norms, conformity, cohesion and patterns of interaction are covered. Problems such as scapegoating and triangulation are analyzed. The following competencies are taught: screening candidates; composing the group; attending to thoughts and feelings; linking; observing group process; using activities and exercises; and ethical group practice.

SOC 225 Family Social Work 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HSW 100 or SOC 100, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces students to the theory and practice of social work with families. Students will learn how to describe American families as social systems, how to describe the structure of a family and how to identify common patterns in family functioning. Common problems and special circumstances in family functioning will be addressed. Students will learn to identify effective ways to engage families. Basic social work interventions with families will be described.

SOC 230 Marriage and Family 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course surveys the principles, practices and problems of: mate selection; marriage and family; and singlehood from a sociological and social-psychological perspective. Emphasis is placed on how socio-cultural changes are reshaping lifestyle choices, parenting, communicating and building and maintaining relationships. Some issues to be examined pertain to family planning, sexuality, sex education, single parenting, divorce, child and spouse abuse.

SOC 250 Juvenile Delinquency 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The growing-up process of late childhood and adolescence from a sociological and cultural viewpoint is a focus of this class. Problems of the individual in his/her social environment, group forces which lead to maladjustment and sociological principles for working with youth from the viewpoint of parent, teacher, police and youth organization leader are analyzed.

Spanish SPN

SPN 101 Beginning Conversational Spanish I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students acquire practical early-elementary conversational skills. They develop the ability to understand and speak everyday conversational Spanish within the context of Spanish-speaking cultures and through introduction of vocabulary, basic grammatical structures and idioms. Listening activities and some reading/writing activities will be included. Students are expected to spend considerable time outside of class practicing with materials provided. This course contains material previously taught in SPN 109.

SPN 102 Beginning Conversational Spanish II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SPN 101 or one semester of college Spanish
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students acquire higher-level elementary conversational skills and develop the ability to understand, speak, react, and reflect using everyday standard Spanish. Through the introduction of vocabulary, grammatical structures, idioms, and real-life dramatization, the students will practice these skills. Videos will be used to introduce and reinforce the grammatical and functional content of this course. This course contains material previously taught in SPN 110.

SPN 111 First Year Spanish I 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This course emphasizes basic conversation tools and grammatical structures. Class work includes written, oral and audio exercises for students to develop their comprehension and communication skills. Students are expected to spend significant time studying outside of class and actively participating in class discussion. Cultural aspects of the Spanish-speaking world are also highlighted. The course is transferable to several four-year colleges. Students who have two or more years of Spanish study are encouraged to take the Spanish Placement Test (available free of charge in the College Testing Center - SC 300).

SPN 119 Spanish Language Adventures 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 15 other, 15 total contact hours

This course of independent study can be undertaken during any of the college field trip "Adventures" to Spanish-speaking countries. Students live in the host country for the duration of the Adventure, visit and study first-hand the outstanding cultural attractions and have the opportunity to practice Spanish throughout their stay.

SPN 122 First Year Spanish II 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SPN 111 minimum grade "C" or score of 270-345 on the Spanish placement exam
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

A continuation of SPN 111, this is a transferable course that emphasizes basic conversation tools and grammatical structures. Class work includes oral, written and audio exercises for students to develop their communication and comprehension skills. Cultural aspects of the Spanish-speaking world are also highlighted. Students must demonstrate SPN 111 proficiency.

SPN 201 Second Year Spanish I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SPN 122 minimum grade "C" or score of 346-427 on the Spanish placement exam
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course emphasizes intermediate level oral and written communication. Study includes conversation and writing tools, grammatical structures, and cultural investigation and analysis. Class is interactive and participatory. Considerable work outside of class is required.

SPN 202 Second Year Spanish II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SPN 201 minimum grade "C" or score of 428 or above on the Spanish placement exam
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course continues intermediate level oral and written communication. Study includes conversation and writing tools, grammatical structures, cultural investigation and analysis and the interpretation and discussion of written works. Class is interactive and participatory. Considerable work outside of class is required.

SPN 205 Second Year Spanish for Business 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SPN 201 minimum grade "C" or score of 428 or above on the Spanish placement exam
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

Spanish for business is an intermediate level four-skills language and culture course designed specifically for students in their fourth semester of Spanish who have an interest in business. It will help to prepare students to be linguistically and culturally aware participants in international business in the Spanish-speaking commercial market.

SPN 211 Intermediate Conversational Spanish 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SPN 102, SPN 122, SPN 201 or SPN 202, minimum grade "C"

Level II Prerequisites:

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this flexibly structured course, students acquire vocabulary and expand their ability to express themselves through total student involvement in conversation practice sessions.

SPN 224 Second Year Spanish II - Literature 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SPN 201 or SPN 202, minimum grade "C" or score of 428 or above on the Spanish placement exam

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is a literature course which focuses on Latin American and Spanish short stories and poetry. Authors such as Adolfo Miller, Nicolas Guillen, Ana Maria Matute, Horacio Quiroga, Julio Cortazar, Jorge Manrique y Rosario Castellanos will be studied. The course requires in-class discussion and out-of-class writing in Spanish.

Surgical Technology SUR

SUR 101 Introduction to Sterile Processing 6 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Surgical Technology (APST)

45 lecture, 90 lab, 0 clinical, 0 other, 135 total contact hours

In this course, students are introduced to the profession of sterile processing including patient confidentiality, HIPPA and working as part of a professional team. The principles of decontamination, sterilization, packaging and storage of instrumentation and surgical supplies will be discussed. Identification, assembly, care and proper handling of instrumentation will be presented with a focus on various surgical specialties and the instrumentation associated with each.

SUR 108 Sterile Processing Clinical 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 101 minimum grade "C+"

Corequisites: SUR 109

0 lecture, 0 lab, 224 clinical, 0 other, 224 total contact hours

In a clinical setting, students will work under the supervision of the team leaders and department managers. Students will demonstrate professional behaviors and effective communication skills. Students will actively participate in the process of decontamination, sterilization, and distribution of sterile instrumentation and supplies. Students will be exposed to bloodborne pathogens during their clinical experience.

SUR 109 Sterile Processing Seminar 1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 101 minimum grade "C+"

Corequisites: SUR 108

15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this capstone course students will learn test taking skills in preparations for the CBSPD certification exam. The creation of resumes and development of interview and job search strategies will also be examined.

SUR 110 Introduction to Surgical Technology/Surgical Patient 5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Surgical Technology program
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will examine legal concepts and ethical issues relating to the surgical patients as well as the physical environment of the OR, safety standards, hazards, and disease transmission. Surgical conscience and its application, along with components of effective surgical teamwork are discussed. In the lab environment, students will learn, practice and be evaluated on essential skills required during surgical case management. Students will identify related professional organizations, and examine the various roles and job description of a surgical technologist.

SUR 170 Surgical Pharmacology 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Surgical Technology program
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students will define anesthesia, and be introduced to the duties and roles performed by the OR team during drug administration. Students will learn to identify the actions, uses, side effects, contraindications and administration of drugs and anesthetic agents in the care of the surgical patients. Safe practices and sterile techniques used in anesthesia procedures will be emphasized. Students will become familiar with anesthesia equipment, supplies, terminology and medications used in surgery.

SUR 180 Surgical Procedures I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 110 minimum grade "C+", may enroll concurrently
Corequisites: SUR 181
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to diagnostic and surgical procedures used in general surgery, obstetrics and gynecological surgery, as well as genitourinary procedures. This course provides a study of anatomy and physiology, pathophysiology, pharmacology and microbiology as it relates to surgical intervention.

SUR 181 Surgical Procedures I Lab 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 110 minimum grade "C+", may enroll concurrently
Corequisites: SUR 180
0 lecture, 60 lab, 0 clinical, 0 other, 60 total contact hours

In the lab environment, students will learn, practice and perform essential skills required in the surgical setting. This course instructs students to apply the principles of introductory surgical procedures in a lab environment. Students are introduced to specific instruments, equipment and supplies in General Gynecological (Obstetrics) and Genitournary surgery. Students will practice and be evaluated on their surgical case management skills. The title of this course was previously Surgical Procedures III Clinical.

SUR 210 Surgical Procedures II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 110, SUR 170, SUR 180 and SUR 181, minimum grade "C+"
Corequisites: SUR 211
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to diagnostic and surgical procedures used in ophthalmic, otorhinolaryngology, oral and maxillofacial, orthopedic, plastic, cardiothoracic, peripheral vascular and neurosurgery. This course provides a relevant study of anatomy and physiology, the introduction to disease, tumors, fluid and hemodynamic disorders, inflammation and infection, surgically treatable diseases and disorders, and pharmacology as it relates to surgical intervention.

SUR 211 Surgical Procedures II Lab 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 110, SUR 170, SUR 180 and SUR 181, minimum grade "C+"
Corequisites: SUR 210
0 lecture, 60 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will apply the principles of surgical procedures in the lab environment. Students are introduced to specific instruments, equipment and supplies relating to otorhinolaryngology, orthopedic, moral and maxillofacial, plastic, ophthalmic, cardiothoracic, peripheral vascular and neurosurgery. The title of this course was previously Surgical Procedures II Clinical.

SUR 231 Clinical Education I 1 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 110, SUR 211 and SUR 270, minimum grade "C+"; SUR 211 and SUR 270, may enroll concurrently
0 lecture, 15 lab, 120 clinical, 0 other, 135 total contact hours

In the clinical environment, students will learn, practice and perform essential skills required in Preop, PACU, CSPD and the OR. While under the supervision of the OR staff, students will demonstrate and practice methods of disinfection and sterilization, assist in sterile storage and distribution, observe cases and begin to scrub and assist team members when directed. Students will also meet in seminars during the semester. The title of this course was previously Surgical Procedures III Clinical.

SUR 241 Clinical Education II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 231 minimum grade "C+"
Corequisites: SUR 250
0 lecture, 15 lab, 480 clinical, 0 other, 495 total contact hours

In this course, students further develop the clinical skills needed in the perioperative setting. In this final clinical rotation, the student will exhibit a more independent role, while under the continued supervision of the surgical team. Students actively participate in all phases of the perioperative process.

SUR 250 Surgical Technology Seminar 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 210, SUR 211 and SUR 270, minimum grade "C+"
Corequisites: SUR 241
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this capstone course, students will prepare to care and advocate for the surgical patient. This course entails a combination of research, theory and reflective learning (lab and clinical experience). Emphasis is placed on class participation which consists of lectures, individual and group projects, problem solving exercises and group discussions. In this course, students will develop their personal resume, as well as work on interview skills and present their resume in a "mock" panel interview during the course. Preparation for entering the Surgical Technology profession encompasses: knowledge, skill, professionalism, independent thinking and the ability to react quickly under stressful situations. This course will also allow for student exposure to exam questions similar to those seen on national Surgical Technology exams.

SUR 270 Biomedical Science and Minimally Invasive Surgery 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 110, SUR 170, SUR 180 and SUR 181, minimum grade "C+"
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the areas of information technology, electricity, laser and robotics as they apply to the surgical technologist role in minimally invasive surgery. As surgical equipment becomes more technical, understanding the fundamental principles of these technologies is essential to the entry-level surgical technologist. Students will practice and be evaluated on their surgical technologist support skills in robotics and minimally invasive surgery.

Tax TAX

TAX 101 Income Taxes for Individuals 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3 or MTH 125
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is a beginning course in Individual Tax Return preparation covering both Federal and Michigan taxes that affect individuals. Students receive practical experience in preparation of an income tax return, both manually and using tax return computer software. The course is designed for those seeking employment as paraprofessionals in the tax field. Individuals who simply wish to understand their own taxes can benefit as well. Students must be able to work with numbers and computer applications.

Union Approved Supervision UAS

UAS 111 Construction Supervision I: Motivating Employees 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Construction Supervision program
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides an introduction to the study of organizational behavior and motivational theory for students enrolled in the Construction Supervision certificate and associate degree programs. The importance of understanding how motivation, personality, conflict, communication, group dynamics, and leadership are important in supervising the construction project is highlighted. Limited to active members of articulated union building trade apprenticeship programs.

UAS 122 Construction Supervision II: Supervisory Skills 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Construction Supervision program and UAS 111 minimum grade "C", may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to construction project management. From the configuration of the project team through the project closeout, students will identify the supervisory skills needed for a successful construction project. Limited to active members of articulated union building trade apprenticeship programs.

UAS 210 Construction Supervision III: Legal and Personnel Aspects 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Construction Supervision program and UAS 111 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is one of the series of courses for students enrolled in the Construction Supervision certificate and associate degree programs. This course introduces students to contract law, labor agreements and other legal relationships as they apply to the construction industry. Students will examine issues related to managing human resources such as recruiting, pay incentives, evaluations and training. Various aspects of career management will be highlighted. Limited to active members of articulated union building trade apprenticeship programs.

UAS 222 Construction Supervision IV: The Construction Project 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Construction Supervision program and UAS 122
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students examine stakeholders of the construction project and their relationship to each other. Students will become familiar with the basic function of a construction project and how the activities performed contribute to the overall profitability and health of a project as a whole. In addition, students will gain practical and operational supervisory skills specifically in the areas of planning, organizing and leading construction projects. Limited to active members of articulated union building trade apprenticeship programs.

UAS 230 Construction Supervision V: Scheduling and Project Management 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Construction Supervision program; UAS 210 and UAS 222, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the various processes used to develop and manage the schedule of a project. Additionally, students will examine various tools used to assist in schedule development and management. Finally, students will explore the desktop scheduling software Microsoft Project. Limited to active members of articulated union building trade apprenticeship programs.

United Assoc Sprinkler Fitters UAR

UAR 160 Introduction to Sprinkler Fitter Practices 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers introductory topics for new Sprinkler fitter apprentices including: job safety and health, heritage in the pipe trades, and use and care of tools. Limited to United Association students.

UAR 162 Basic Drawing and Introduction to Automatic Sprinklers 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

Basic drawing covers preparation of working drawings including orthographic projection, dimensioning, illustrating pipe threads, section views and isometric drawings. Introduction to Automatic Sprinklers includes the fundamentals of sprinkler protection and the standards governing systems. Topics also include the hazard categories specified in NFPA 13, wet and dry systems, flushing sprinkler systems and the fundamentals of inspecting and testing systems. Limited to United Association students.

UAR 164 Reading Automatic Sprinkler Piping Drawings 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course familiarizes the student with the drawings most often found in the sprinkler trade. Topics include standard sprinkler system drawings, common symbols and abbreviations found on the drawings. Limited to United Association students.

UAR 164R Reading Residential Blueprints for Sprinkler Systems 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course familiarizes the student with the drawings most often found in the residential sprinkler trade. Topics include the standard drawings used by residential sprinkler fitters and abbreviations and symbols found on those drawings. Limited to United Association students.

UAR 166 Installation of Sprinkler Systems 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers the installation regulations governing fire protection systems, which includes design, installation and testing. Other topics include the regulations with respect to piping, fittings and other appurtenances for fire protection systems. Limited to United Association students.

UAR 166R Installation of Residential Fire Sprinkler Systems 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course presents the detailed rules and regulations governing the design, installation and testing of automatic fire sprinkler systems. This course emphasizes the rules that sprinkler fitters must satisfy on the job and also explains the principles of older, existing systems. This course references the NFPA code manuals. Limited to United Association students.

UAR 168 Architectural Working Drawings and Blueprint Reading for Sprinkler Fitters 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

Architectural Working Drawings and Blueprint Reading covers reading the types of prints found in a complete set of working drawings. The course includes correcting or compensating for inconsistencies found in drawings. Limited to United Association students.

UAR 170 Sprinkler Water Supply and The Automatic Sprinkler 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

The Automatic Sprinkler portion of the course includes how sprinklers operate, regulations applicable to sprinklers, recognizing and installing the proper sprinkler, modifying sprinklers to address specific needs. The Water Supply portion of this course addresses water supply requirements for sprinkler systems. Topics include the relationship of occupancy classifications to water supply requirements, the installation of fire service mains, pumps, controllers, and tanks. Limited to United Association students.

UAR 170R The Residential Automatic Fire Sprinkler 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers the various types of automatic fire sprinklers including their similarities and differences. Particular emphasis is placed on the selection of the proper sprinkler and the regulations covering the use of diverse types of heads. This course references current NFPA code books. Limited to United Association students.

UAR 172 Types of Fire Protection Systems and Alarms 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers various types of fire protection systems which include wet pipe and anti freeze systems. Topics include the design principles, specification, installation and operation of fire protection systems. Limited to United Association students.

UAR 174 Special Application Sprinkler Systems and Hydraulics 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

The Special Application Sprinkler Systems course addresses a wide range of systems found in the field. The course covers: latch clapper and differential type valves, pilot line systems and preaction systems. The hydraulics portion of the course covers pressure, total force, specific gravity/density, pressure generation, flow rate, sprinkler system design, pressure loss and calculated systems. Limited to United Association students.

UAR 176 Human Relations 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course is an overview of the most important aspects of the role of foreman. Topics include the primary duties of the foreman, understanding what it takes to work well with others, and communicating effectively with others. Limited to United Association students.

UAR 178 Technical Writing 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

Technical Writing covers the basic reports and forms used in the fire protection industry. Topics include specific instructions on how to complete reports and forms in a manner acceptable to others in the fire protection industry. Limited to United Association students.

United Association Pipefitters UAF

UAF 102 Introduction to Arc Welding, Soldering, and Brazing 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This is the introductory course in welding, soldering and brazing. Topics include: safety in welding, cutting and allied processes, oxyacetylene cutting and welding, procedure for setting up oxy-fuel cutting and welding equipment. Related safety is covered in all topics. Limited to United Association students.

UAF 120 Introduction to Pipefitter Practices 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course is the introduction to pipefitting for new apprentices. Course topics include the heritage program, use and care of tools, pipe, fittings, valves, supports and fasteners, job safety and health and soldering and brazing. Related safety is covered in all topics. Limited to United Association students.

UAF 122 Drawing Interpretation and Plan Reading 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This is an introductory course in drawing and reading blueprints. Course topics include: Introduction to basic drawing tools, measuring tools, lettering skills, three-view, plan view, elevation view drawings, graphic symbols for pipe fittings and valves, interpretation of technical diagrams, piping drawings, and interpretation of building plans and building specifications. Limited to United Association students.

UAF 124 Oxy Fuel Cutting and Shielded Arc Welding 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This is an intermediate course in shielded metal-arc oxy-fuel cutting and welding leading to certification. Limited to United Association students.

UAF 126 Hydronic Heating and Steam Systems 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course is concerned primarily with the technical aspects of design and installation of several types of hydronic systems found in the pipe trades. Topics also include information concerning the installation of high-efficiency heating and cooling systems, low and high temperature, radiant heat and solar hot water heating systems. The steam system portion of the course includes: generating steam, installing steam piping and accessories and troubleshooting all types of steam systems. Limited to United Association students.

UAF 128 Refrigeration and Electrical Controls 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers the basic principles of air conditioning and refrigeration. The basic components of the refrigeration cycle are identified. Topics include operation and proper installation of the devices and equipment required to control the flow of refrigerant in air conditioning and refrigeration systems. Limited to United Association students.

UAF 130 Advanced SMAW Welding 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This advanced Shielded Metal-Arc Welding course leads to shielded metal-arc welding certification. Limited to United Association students.

UAF 132 Advanced Pipefitter Topics 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers special topics for pipefitters. Topics may include customer relations, appearance and on-the-job conduct, and effective leadership/supervision. Related safety is included in all topics. Limited to United Association students.

UAF 134 Controls and Instrumentation 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

The purpose of this course is to teach the fundamentals of basic electricity and the fundamentals of electrical controls found in mechanical equipment installations such as air conditioning, heating, fuel burning, water heating and refrigeration. Safety is stressed. Limited to United Association students.

UAF 136 GTAW Welding 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

The Gas Tungsten Arc Welding (GTAW) process provides a method of joining difficult-to-weld metals. This course shows how this process has been adapted to the welding of carbon steel and stainless steel pipe. The course covers equipment, shielding gases, tungsten electrodes, etc. along with safe work practices unique to this type of welding. Limited to United Association students.

United Association Plumbers UAP

UAP 100 Introduction to Plumbing Practices 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course is the introduction to plumbing for new apprentices. Course topics include the heritage program, use and care of tools, pipe, fittings, valves, supports and fasteners, job safety and health, and soldering and brazing. Related safety is covered in all topics. Limited to United Association students.

UAP 102 Introduction to Arc Welding, Soldering and Brazing 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This is the introductory course in welding, soldering and brazing. Topics include: safety in welding, cutting and allied processes, oxyacetylene cutting and welding, procedure for setting up oxy-fuel cutting and welding equipment. Related safety is covered in all topics. Limited to United Association students.

UAP 104 Drawing Interpretation and Plan Reading 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This is an introductory course in drawing and reading blueprints. Course topics include: introduction to basic drawing tools, measuring tools, lettering skills, three-view, plan view, elevation view drawings, graphic symbols for pipe fittings and valves, interpretation of technical diagrams, piping drawings and interpretation of building plans and building specifications. Limited to United Association students.

UAP 106 Oxy Fuel Cutting and Shielded Arc Welding 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

All phases of welding are covered in this course beginning with oxyacetylene and oxy-fuel cutting and welding progressing through shielded metal-arc welding test procedures. Topics include tools, equipment, types of rod, weld positions, proper gaps, bevels and the various types of lap and butt joints. Safety is stressed throughout. Limited to United Association students.

UAP 108 Water Supply and Drainage 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

Water supply topics include: water treatment, water mains and services, building water supply systems and hot water supply. The course provides a detailed description of the purpose and function of the various components of a water supply system. The drainage portion of this course presents the various types of drainage systems installed and maintained by pipe trades journeyworkers. The course includes: sewage disposal, sewers and drains, building drainage systems, the plumbing trap and venting the drainage system. Limited to United Association students.

UAP 110 Customer Service Techniques 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This training encompasses all aspects of customer service. Topics include customer relations, appearance and on-the-job conduct. Limited to United Association students.

UAP 112 Plumbing Fixtures and Appliances 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course presents the handling and installation of the various types of plumbing fixtures and appliances including information on accessories and fixture controls (flushmeters, faucets, etc). Limited to United Association students.

UAP 114 Plumbing Codes and Regulations 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers plumbing code construction, general use of codes and code application. Appropriate state, local, or provincial codes are reviewed. Limited to United Association students.

UAP 116 Medical Gas and Backflow Prevention Techniques 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course provides introduction to the concepts and procedures of Medical Gas installation. Topics include certification procedures and requirements for installers of medical gas systems, including brazer qualification. This course also presents the importance of backflow prevention and the dangers of cross connections. Topics include guidelines for acceptable testing practices, annual inspection and repair, and maintenance of backflow prevention assemblies used in modern plumbing installations. Limited to United Association students.

UAP 118 Advanced Plumbing Practices 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course addresses advanced plumbing practices including supervision/leadership, pipe systems design and advanced drawing procedures. Limited to United Association students.

United Association Service Tec UAE

UAE 140 Introduction to HVACR Service Technician Practices 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course is the introduction to HVACR for new apprentices. Course topics include the heritage program, use and care of tools, pipe, fittings, valves, supports and fasteners and job safety and health. Related safety is covered in all topics. Limited to United Association students.

UAE 142 Soldering and Brazing 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

The preparation and joining of the cup type copper tube is covered in detail in this course both by the soldering and the brazing methods. The student is taught the proper and safe use of tools, torches, solders, filler metals and fluxes used in making a soldered/brazed joint. Related safety is included in every topic. Limited to United Association students.

UAE 144 Refrigeration 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This is the introductory refrigeration course. Topics include basic physics, basic electricity, and the basic refrigeration cycle of reciprocal, centrifugal, rotary, screw and absorption systems. Control and sequence of operation of the above systems is included. Introduction to environmental impact of refrigerant handling is included. Related safety is covered in each topic. Limited to United Association students.

UAE 146 Air Conditioning 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers air conditioning systems, installation and service. Topics include: psychrometric properties of air, building heating and cooling load calculations, control applications, energy conservation and heat recovery, in addition to a review of basic science. Limited to United Association students.

UAE 148 Electrical Controls 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

The purpose of this course is to teach fundamental theory and operation of electric/electronic controls used in starting, stopping and cycling electro-mechanical equipment encountered in the HVACR field. Related safety is included in each topic. Limited to United Association students.

UAE 150 DC Electronics 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers the fundamentals of direct current applications in control theory and basic electronics. Limited to United Association students.

UAE 152 Advanced Electrical Controls and Pneumatic Controls 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

The pneumatic controls portion of the course is a presentation of basic pneumatic control principles. Theory of operation, basic principles and troubleshooting are included. Related safety is included in each topic. Limited to United Association students.

UAE 154 Advanced Air Conditioning and Refrigeration 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course presents special topics in air conditioning and refrigeration. Topics may include introduction to building automation, load calculations, duct sizing, Universal CFC certification and air distribution. Limited to United Association students.

UAE 156 Air and Water Balancing and Motor Alignment 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers principals of balancing forced air systems, balancing flow in hydronic loops, pumps, principles of alignment and vibration elimination. Limited to United Association students.

UAE 158 Advanced HVACR Practices 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

Special topics covered in this course may include advanced building automation, leadership/supervision, customer relations, importance of clear and concise reporting (work orders) and safety. Limited to United Association students.

United Association Training UAT

UAT 110 UA/MCA Foreman Certification 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course covers methods of teaching about becoming a foreman. With the UA and the Mechanical Contractors' Association (MCA) recognizing the need for effective leaders, this course introduces current and potential foremen to the topics that are critical in the workplace. It focuses on leadership functions, commitment, people skills, communications, teamwork and organization. Students will be strongly urged to implement this Foreman Certification Program at the local union level. Limited to United Association program participants.

UAT 110C Canadian Foreman Certification 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course is designed to certify the participants as Canadian Foreman Certification Instructors. The program provides instructors with the information and ability to present material to enable student journeypersons to move into supervisory roles in the Union construction industry. This course will provide the tools for the instructors to prepare their students for the transition to leadership roles and initial supervisory skills needed to complete the requirements of the position. Limited to United Association program participants.

UAT 111 Introduction to Industrial Teacher Training 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Industrial Training program
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course will focus on the principles of learning, elements of trade teaching and the methods of teaching an applied technical skill. Limited to United Association program participants.

UAT 121 Industrial Teacher Training II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Industrial Training program
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course will focus on developing instructional objectives, planning and presenting related information lessons and the methods of teaching a second applied technical skill. Limited to United Association program participants.

UAT 131 Industrial Teacher Training III 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Industrial Training program
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course will focus on the development of written tests, an elective professional skill and a third teaching demonstration in a technical skill area. Limited to United Association program participants.

UAT 141 Industrial Teacher Training IV 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Industrial Training program
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course will focus on discussion and interaction techniques, an elective professional skill and the teaching methods in a fourth technical skill area. Limited to United Association program participants.

UAT 151 Industrial Teacher Training V 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Industrial Training program
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course will focus on innovations and problems in trade teaching, an elective professional skill and methods of teaching in a fifth technical skill area. Limited to United Association program participants.

UAT 161 Technical Seminar 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Industrial Training program
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course will focus on the methods of teaching a technical skill area. Special approval required and will replace UAT 121, 131, 141, or 151. Limited to United Association program participants.

UAT 171 Professional Seminar 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Industrial Training program
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course will focus on instructional methodology and practices for the trade-related instructor. Special approval required and will replace UAT 121, 131, 141, or 151. Limited to United Association program participants.

UAT 201 Advanced Instructor Training I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: UAT 151
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course is designed for graduates of the 5-year UA instructor training program. Trade teachers will expand their skills and knowledge in teaching techniques and methodologies, as well as technological concepts. The student will select one 45 hour module or two 22 1/2 hour modules from unit one or unit two. Limited to United Association program participants.

UAT 202 Advanced Instructor Training II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: UAT 151
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course is designed for graduates of the 5-year UA instructor training program. Trade teachers will expand their skills and knowledge in teaching techniques and methodologies, as well as technological concepts. The student will select one 45 hour module or two 22 1/2 hour modules from unit one or unit two. Limited to United Association program participants.

UAT 203 Advanced Instructor Training III 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: UAT 151
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course is designed for graduates of the 5-year UA instructor training program. Trade teachers will expand their skills and knowledge in teaching techniques and methodologies, as well as technological concepts. The student will select one 45 hour module or two 22 1/2 hour modules from unit one or unit two. Limited to United Association program participants.

UAT 204 Advanced Instructor Training IV 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: UAT 151
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course is designed for graduates of the 5-year UA instructor training program. Trade teachers will expand their skills and knowledge in teaching techniques and methodologies, as well as technological concepts. The student will select one 45 hour module or two 22 1/2 hour modules from unit one or unit two. Limited to United Association program participants.

UAT 205 Advanced Instructor Training V 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: UAT 151
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course is designed for graduates of the 5-year UA instructor training program. Trade teachers will expand their skills and knowledge in teaching techniques and methodologies, as well as technological concepts. The student will select one 45 hour module or two 22 1/2 hour modules from unit one or unit two. Limited to United Association program participants.

UAT 207 Using UA Resources 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

The focus of this course is to provide students with the knowledge and skills to use technology to teach with Blackboard and Microsoft Office and to use everything available to them through UANET. This course will focus on the apprentice registration process, the UA Smart System and state and federal grants. Students taking this course should have a working knowledge of how to operate a computer. Limited to United Association program participants.

UAT 210 Public Speaking 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course is designed to help students acquire essential speaking and listening skills for the classroom. In-class exercises focus on the delivery of lecture material and conducting demonstrations. Students polish organization and delivery skills, as well as gain a heightened awareness of the relationship between a speaker and an audience. Students are encouraged to bring materials from classes they are currently teaching as reference for class exercises. Limited to United Association program participants.

UAT 211 Planning, Teaching and Assessing Effective Lessons-Beginning 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This is the introductory course for the Instructor in the Trades Program. Effectively teaching adult learners, planning through backwards design and accommodating different learning styles are the focus of this course. Topics taught in UA 102, 103 and 104 are also introduced. Limited to United Association program participants.

UAT 212 Planning, Teaching and Assessing Effective Lessons-Intermediate 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, instructors in the trades program will continue to learn to teach adult learners, develop lesson plans using backwards design and accommodate various student learning styles. Limited to United Association program participants.

UAT 213 Planning and Presenting Lessons 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course covers methods of teaching about planning and presenting two types of lessons: skills and information. Students will learn to use traditional and UA electronic resources for planning lessons, managing courses and teaching. Students will learn to choose methods, techniques and technologies appropriate to a particular class and situation. Working together, students will develop a lesson plan, deliver a brief lecture and demonstrate a task. Limited to United Association program participants.

UAT 214 Techniques in Classroom Interaction 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This covers methods of teaching teachers about how to create interactive classroom discussions and the techniques associated with developing individualized instruction. Topics include: the process of creating interactive discussions in trade teaching; guidelines for conducting classroom discussions; issues related to group dynamics; and concerns about teaching a diverse group of students. Limited to United Association program participants.

UAT 215 Problem Solving in Trade Teaching 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course covers methods of teaching problem resolution and innovation implementation in the local UA school. Topics include analyzing and solving teaching problems, recognizing student learning disabilities, evaluating student performance and implementing innovative solutions in the local school. Students should come prepared to share innovative ideas from their local school. Limited to United Association program participants.

UAT 219 Introductory ATR Training 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Must have a visual acuity examination document completed by a doctor prior to attending the class. This document must be brought to class; High school diploma or equivalent; Minimum 7 years UA Journeyman experience or completion of UA's Apprenticeship program and 2 years UA Journeyman experience; Minimum 2 years experience in UA welding instruction; Letter of recommendation from Local Union Management
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students will be introduced to the fundamentals of the UA Welder Certification Program. Participants will develop the knowledge and skills to perform the duties and responsibilities of an authorized testing representative (ATR) as defined in the program, from administrative functions, to performing visual inspections of welded coupons, to determining their acceptability, and verifying compliance of radiographic examinations. At the conclusion of this course, the student will be ready to complete the UA ATR examination. Limited to United Association program participants.

UAT 220 Pipe Trades Applied Mathematics 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students learn methods of teaching about pipe trades applied mathematics. Topics to be covered include: teaching styles and methods, creating exam questions and applying mathematics to the plumbing and pipefitting industry. There will be a refresher on some important math functions, such as offsets, metric systems and calculator usage. On the final day of class, students will be required to demonstrate a basic math lesson to the class. Limited to United Association program participants.

UAT 221 Gas and Oil Burner Service 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about concepts and methods for teaching apprentices and journeyworkers the principles of gas and oil burner service. Topics include presenting and demonstrating various lessons on burner service, gas installations, gas and oil burner designs of flame safeguard controls, making and using models as demonstrators, burner set-up, maintenance and repair and finding various sources of updated information. Curriculum presentation techniques, application of ideas to local classroom situations and training mock-ups will also be discussed. On the last day of class students will be required to give a presentation to the class. Limited to United Association program participants.

UAT 222 Basic Computer for the Trade Teacher 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course introduces the basics of computers. Students will learn to produce documents using a word processor, create electronic spreadsheets to help prepare budgets and manage numerical information, prepare presentation graphics and learn search techniques on the Internet. Topics include: hardware and software, Windows operating system, Word, spreadsheet, creating course handouts, PowerPoint and Internet navigation. Limited to United Association program participants.

UAT 223 Centrifugal Water System Analysis 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students are provided instruction in teaching methods that they will use to teach apprentices about various chilled water systems. Following a review of P/E diagrams, basic thermodynamics, system design and troubleshooting of common problems, students will discuss and develop skills to instruct in topics such as centrifugal water systems theory, refrigerant handling, recovery, maintenance and operation. Limited to United Association program participants.

UAT 224 OSHA for the Construction Industry 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course covers methods of teaching about OSHA standards. The course is designed for "new" students only and emphasis will be placed upon those areas in construction that are most hazardous. OSHA standards that apply to the construction industry will be used as a guide. Students will be briefed on effective instructional approaches and the effective use of visual aids and handouts. After completion of course, students will receive a certificate from the Department of Labor. Limited to United Association program participants.

UAT 225 Plumbing Fixtures 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching about the various types of plumbing fixtures. Students will discuss and develop skills to instruct in topics such as the history of plumbing fixtures; the theory of design; the principles of installation and operation of these fixtures; the fixture controls and related appliances. Students taking this class should have a working knowledge of plumbing fixtures. Limited to United Association program participants.

UAT 226 PowerPoint for Instructors 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; UAT 222
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

Microsoft PowerPoint is a flexible tool for creating and delivering class presentations and handouts. This course will cover methods in developing instructional presentations and related student materials. Basic topics will include adding text, selecting appropriate fonts and colors, inserting graphics, using master slides and displaying a slide show. Advanced topics will include adding tables and charts, inserting hyperlinks, adding animations, customizing slide shows and using the drawing tools. This is a hands-on computer class. Limited to United Association program participants.

UAT 227 Geothermal Heat Pump Installation 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This training session will provide the necessary skills to train your local members as IGSHPA certified installers. This training emphasizes the importance of the effort in bringing energy independence and environmental security to our nation by installing this renewable space conditioning system. Upon completion of this training program and the passing of the required exam, a card and certificate will be issued to the student instructor certifying them as an UA/IGSHPA certified installer trainer. Limited to United Association program participants.

UAT 228 Online Teaching Techniques 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students explore the use of online resources such as Blackboard as a teaching tool. Forums, chat rooms, online testing, online assignments, using external links and other Internet features will be explained and demonstrated. Methods for converting traditional class materials into an online format will be emphasized. Procedures and standards for class page creation and maintenance will be presented. Students will have hands-on practice in creating online course materials. Students taking this course should be familiar with using an Internet browser and must have an email account. Limited to United Association program participants.

UAT 229 Introduction to Variable Frequency Drives 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course covers methods of teaching about how to provide the Local Union instructor with the necessary presentation materials and teaching techniques to introduce a Variable Frequency Drives (VFD) class in their curriculum. Students taking this course should have a good knowledge base of controls and AC induction motors and be working in the HVAC service field. Installation, setup/programming and troubleshooting techniques will be covered. Limited to United Association program participants.

UAT 230 3D Computer-Aided Drafting (CAD) 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students learn methods of teaching 3D Computer-Aided Drafting (CAD). Topics to be covered include the 3D CAD environment; creation of 3D piping, 3D pipefittings and other complex solids; creating surfaces; editing solids; and utilizing AutoCAD and Quickpen Pipe Designer 3D software. Limited to United Association program participants.

UAT 231 UA Green Awareness Certification 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will receive instruction in "Green" awareness that emphasizes concepts and principles related to the specification, purchase and application of energy-efficient products. Upon successful completion of this course and a certification exam, students will receive a certification that attests to their knowledge of the emerging trends, terminologies, systems and products that are considered green. Limited to United Association program participants.

UAT 232 Drainage 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will develop methods for teaching about drainage. Topics to be taught include: history of the plumbing system; private and public sewage disposal systems; sewers and drains; grading; compaction; building drainage systems; the plumbing trap; and venting the drainage system. Limited to United Association program participants.

UAT 233 CAD for the Piping Trade 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course covers methods of teaching about the efficient and productive implementation of computer-aided drafting to the piping drawing production environment. Utilizing AutoCAD software, issues relating to maximizing the efficiency of on the job CAD drawing production are addressed, such as configuration of peripheral equipment and AutoCAD software configuration. Students taking this course should have working knowledge of basic drafting. Limited to United Association program participants.

UAT 233B Introduction to Building Information Modeling (BIM) 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students receive an update on changes to BIM tools such as AutoCAD, NavisWorks Manage and Quickpen Pipe Designer 3D software. They explore the critical aspects of Building Information Modeling (BIM) as applied to piping coordination, fabrication and installation within the piping model production environment. Students discuss and develop skills to instruct in topics such as process and procedure issues relating to the on-the-job application of the BIM piping model within the three-dimensional environment, three-dimensional model production, simultaneous production tasking, coordination clash detection, pre-fabrication applications and electronic transfer of virtual layouts to real world installations (Total Station). Students should have a basic understanding of CAD. Limited to United Association program participants.

UAT 234 Online Recruiting and Promotion 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn how to create a local union website and promote the local union through radio, television and the Internet for the purpose of advertising and mass media recruiting. Upon completion of this course, the student will have a working website for their local union, purchase their own domain name (dot-com address), and have their site published on the Web. Students will also learn various strategies for promoting their local union and learn about recruiting using the Internet and mass media. Limited to United Association program participants.

UAT 235 Power Piping 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course covers methods of teaching about the fundamentals in the design of ASME B31.1 Power Piping. It focuses on the installation of proper pipings, pipe supports, history of the ASME codes, material science, mechanical behaviors, piping metallurgy, welding metallurgy, metal failures and proper material acquisitions. Basic fossil-fired plant steam-water cycle, feed-water cycle and piping hanging loads will be covered. Limited to United Association program participants.

UAT 236 Coyne First Aid for the Trades 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this train-the-trainer course, student instructors will be certified to teach and to conduct the Coyne basic life support/first aid training program. The Coyne's program is accepted by OSHA. Topics to be covered include: providing basic life support for adults, infants and children; performing first aid for musculoskeletal injuries and burns; using the automated external defibrillator; and administering proper care in diabetic emergencies, seizures and near drowning. Limited to United Association program participants.

UAT 237 Geothermal Certification 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This train-the-trainer course will certify the student instructors to teach geothermal heating and cooling. Topics to be covered include: principles of geothermal heating and cooling; design and material options; energy independence; and environmental security. Upon completion of the training program and passing the exam, students will be issued IGSHPA accreditation and be certified as a UA/IGSHPA trainer/installer. Limited to United Association program participants.

UAT 238 Methods of Teaching Downhill Welding 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course is designed for the welding instructor who will be teaching apprentices and journey workers in the technique of Downhill Welding. The welding instruction will be given on large diameter pipe. Classroom instruction on how and what to teach will be presented. This class will include joint preparation, line up on coupons and hands-on welding. Limited to United Association program participants.

UAT 239 AWS-CWI Certified Welding Inspector 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This is an intensive seven day course designed to prepare a candidate to successfully complete the American Welding Society (AWS) Certified Welding Inspector (CWI) Examination. Limited to United Association program participants.

UAT 240 Applied Electrical Fundamentals 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods and techniques used to teach applied electrical fundamentals. Following a review of the fundamental electrical principles and the electrical controls commonly used in the pipe trades, students will learn to instruct apprentices how to read and interpret symbols, schematics and wiring diagrams, use simple test equipment. Safety will be stressed as apprentices are taught to make checks on circuits and to measure voltage, amperage and resistance. Limited to United Association program participants.

UAT 241 Advanced Water Supply 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will be provided with information on the latest advancements in advanced potable hot water and water supply systems and technologies. Green technologies, such as rainwater harvesting, water re-use, solar thermal potable water heating and geo-thermal systems, are also discussed. Students will develop teaching methods for topics such as water mains and services; building water supply systems; and cross connections, valves and pumps. Emphasis will be given throughout the course on the best way to develop the student instructor's own local training program. Limited to United Association program participants.

UAT 242 Advanced Centrifugal Water Chillers 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching about centrifugal overhaul procedures, precision measuring techniques, teardown techniques, start-up and chiller analysis. Compressor component functionality will be stressed in order to give the student a good working knowledge of centrifugal compressor design and operation, including a step-by-step centrifugal teardown procedure. There will be 2 days of hands-on training at which time a centrifugal compressor shall be completely disassembled and rebuilt. Limited to United Association program participants.

UAT 243 Operation of the Green Trailer 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn how to present classes covering the basics of Sustainable (Green) Technology as it applies to the mechanical and plumbing systems installed and serviced by UA members. Students will learn best practices for teaching with the Hampden Green Training equipment on the UA Green Training Trailer. Trailer and equipment safety, proper trailer setup, operation of the onboard generator, rear projection system, fuel, electrical and water hookup will be covered. Some of the training demonstrators onboard the trailer are: fuel cell trainer, wind power generation, green plumbing system trainer, solar heating system, solar photovoltaic system, geothermal system trainer and a high efficiency gas furnace. UA Green Training Trailer event scheduling and transportation policies will be covered. Limited to United Association program participants.

UAT 243B Operation of the UA Welding Trailer 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

The purpose of this course is to instruct the student in the methods and techniques utilized in the site selection, transport, installation of required utilities and equipment operation and maintenance for the UA Welding Training Trailer. Upon completion of the course, the student will be able to request the trailer, take receivership (setup and pack for shipping), give tours of the trailer and provide training at the local union facility. The training will also involve operation of welding equipment, tools and video training devices installed in the trailer. Limited to United Association program participants.

UAT 243C UA Pipe Trades Trailer Operations 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods and techniques utilized in the site selection, transport, installation of required utilities and equipment operation and maintenance of the UA pipe trades training trailers. The trade trailers are outfitted with the very latest equipment utilized in the plumbing, pipefitting, HVAC and sprinkler fitting industries for the purpose of training apprentices and journey persons of the United Association. Limited to United Association program participants.

UAT 243D Residential Plumbing Demo Training Trailer 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will receive instruction on the use of the Plumbing Service Demonstration Training Trainer. The trainer includes several portable modules loaded in a 53' semi-trailer for use by local training centers for immediate Plumbing Service Training. It is designed to highlight the variety of plumbing services that UA Signatory Contractors provide as well as the training UA Plumbing Service Professionals receive. This class is a prerequisite for the local's use of the trailers. Limited to United Association program participants.

UAT 244 Fundamentals of Variable Frequency Drives 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will use presentation materials and teaching techniques to introduce a VFD class in their curriculum. Students who take this course should have a good knowledge base of electrical controls and AC induction motors and should be working in the HVAC service field. Installation, setup/programming and troubleshooting techniques will be covered along with associated hands-on activities. Limited to United Association program participants.

UAT 245 Teaching with ExamView 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students are introduced to the best practices of how to use the ExamView Assessment Suite software to create, administer and manage assessments. Utilizing existing question banks, students will design and create question banks and tests, which can then be administered in printed format, on a local area network, or through the Blackboard learning management system. Converting existing testing materials into ExamView compatible format and building new test questions using multiple question formats will also be covered. Limited to United Association program participants.

UAT 246 Concepts of Controlled Bolting 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn to teach concepts of achieving integrity in a bolted joint, the theory of how a bolted connection works dynamically as a piece of equipment, the calculations required to tighten a flange to maximize joint life and integrity and the practical means to achieve preload including the use of hydraulic torque wrenches and hydraulic bolt tensioners. Limited to United Association program participants.

UAT 247 ASME B31.1 Code 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching about ASME B31.1 Power Piping Code. Topics include: B31.1 scope, code history, material selection and use, fabrication rules and their bases, inspection, weld & base metal discontinuities, NDE and testing requirements. Students will examine common problems that develop from not understanding the Code requirements. The development of Quality Control Manuals for Code use, and the application for an ASME Pressure Piping Stamp and its renewal requirements will be covered. Limited to United Association program participants.

UAT 248 Valves 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course covers methods of teaching about plumbing and pipefitting valves. Topics to be covered include: valve designs, valve functions, multi-turn valves, check valves, ball valves, butterfly valves and typical valve failures. The material of valve construction and the specifications and standards governing their construction and use will also be discussed. Students taking this course should have a working knowledge of valves. Limited to United Association program participants.

UAT 249 Methods in Teaching Arc Welding 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching the fundamental theories and practical applications of arc welding. Following a review of arc welding techniques and practical applications, students will develop welder training programs specific to local industry. Training program topics to be covered include: principles of basic welding, metallurgy, shielded metal arc welding, gas tungsten arc welding, gas metal arc welding, flux core arc welding, oxy-fuel cutting and setting up welding equipment for production welding and performance qualifications. Related topics include F numbers, shielding gases, welding electrode classifications, process definitions and theories, consumable selection, storage and handling procedures. Students taking this course should have working knowledge of arc welding. Limited to United Association program participants.

UAT 250 Advanced Applied Drawing 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching advanced plan reading and related drawing. Topics of instruction to be covered include: principles of drawing, proper drawing techniques, sleeve and piping sketches, coordinated drawing, deck layout and piping systems design. Limited to United Association program participants.

UAT 251 Related Science 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching about the principles of science for plumbing and pipe fitting tradespeople. Following a review, students will discuss and develop skills to instruct on topics such as properties and characteristics of water and steam, hydraulics and pneumatics, mechanics, metals, alloys, synthetics and corrosion. Students will generate ideas for their own classrooms to teach the science related to both the plumbing and pipe fitting trades. Limited to United Association program participants.

UAT 252 Introduction to Computer-Aided Drafting 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course is designed as an introduction to computer-aided drafting (CAD) and the CAD environment. Emphasis is placed upon the fundamentals of CAD software and the creation of two-dimensional CAD piping drawings. AutoCAD drafting software and Windows 2000 or Windows XP operating systems are utilized. It is suggested that each student bring a USB thumb drive to use with this course. Limited to United Association program participants.

UAT 253 Copper Piping Systems 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching about the copper piping systems. Topics of instruction to be covered include: copper production, standards and codes regulating the manufacture, specification and installation of copper systems, soldering and brazing of copper to copper and copper to dissimilar metals, alternative joining systems including roll-grooving, press-connect, push-connect and mechanically formed tees. Students will also review installation-related field failure troubleshooting and prevention. Limited to United Association program participants.

UAT 254 Centrifugal Water Chiller Controls 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching the maintenance and repair of centrifugal water chiller controls, including electrical and electronic applications. Fundamentals of microprocessors in relation to control of solid state starters, frequency drives and control systems associated with centrifugal water chillers are covered. Carrier, Trane, and York demonstrator panels and labs will be utilized for hands-on training. Those attending should have knowledge of refrigeration principles. Limited to United Association program participants.

UAT 255 Fundamentals of Rigging 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching the basic fundamentals of rigging. Topics to be covered include: rigging safety in basic knots and their uses, wire ropes, web slings, load calculations and their applications in the trades. Also, signaling methods and practical, safe uses in every day installations in the piping industry will be discussed. Limited to United Association program participants.

UAT 256 Pneumatic Controls 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching about the fundamentals of pneumatic controls. Topics include basic control theory and definition, control loops and the air supply, control valves, velocity reset control, calibration, single and dual thermostats, transmitters, auxiliary devices, single and dual receiver controls and control dampers. Limited to United Association program participants.

UAT 257 Hydronic Heating and Cooling 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching the installation, maintenance and repair hydronic heating and cooling systems. Topics include: low pressure boilers, heat exchangers, system controls and accessories, one, two, three and four pipe systems, two-way and three-way control valves, centrifugal pumps and pump curves, system curves, primary and secondary pumping, balancing, venting, zoning, water chillers, chilled and condenser water systems, cooling towers and water source heat pump systems. Limited to United Association program participants.

UAT 258 Advanced Residential Plumbing 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course covers methods of teaching about advanced residential plumbing. Topics to be covered include: multi-unit housing installations, phases of work, job planning, layout, prefabrication, tools and equipments, residential work advantages, myths about residential plumbing and residential service. Students taking this course must have experience in the plumbing field. Limited to United Association program participants.

UAT 259 Backflow Repair and Maintenance 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching the repair and maintenance of large diameter backflow assemblies from various manufacturers. The main topics covered include troubleshooting and repairing the assemblies and following appropriate safety measures. Students who wish to be certified as "Backflow Repair and Maintenance Instructors" must receive a passing grade on the written and practical examinations, and must have a current backflow prevention certificate. Limited to United Association program participants.

UAT 260 Advanced Steam Technology 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn how to teach advanced steam technology. Topics include behavior of steam and condensate, removing condensate, air and non-condensable gases, piping design considerations, live steam, operation of steam traps and heat exchange coils. Limited to United Association program participants.

UAT 261 Thermoplastic Fusion 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching thermoplastic fusion. Topics to be covered include thermoplastic fusion technology and methods used in the semiconductor, pharmaceutical and chemical processing industries, hands-on operation of the IR (infrared) 63, IR 225, BCF Plus and socket fusion machines and the Weld Inspection Program. Students are expected to wear appropriate work clothes. Limited to United Association program participants.

UAT 262 Pipe Trades Advanced Drawing 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching pipe trades applied drawing. Topics to be covered include: three view, plan view and elevation view drawings; graphic symbols for pipe fittings and valves; interpretation of technical diagrams and piping drawings; and building specifications. Methods of teaching with the Isometric compass are also applied. Limited to United Association program participants.

UAT 263 Fundamentals of Building Automation 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching the basic fundamentals of direct digital control and various building automation system applications as applied to the HVACR industry. Students should have HVACR control experience. Limited to United Association program participants.

UAT 264 Electronic Controls 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn to teach the fundamentals of electronic controls pertaining to HVACR commonly used in the pipe trades. Students taking this course should have a basic knowledge of electrical controls and currently work in the HVACR fields. Limited to United Association program participants.

UAT 265 HVACR Apprenticeship Practicum 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about and develop methods of teaching the different sub-topics related to the Five-Year Heating, Ventilating, Air Conditioning and Refrigeration apprentice training program. The use of pressure-enthalpy diagrams as a teaching aid will be stressed. The HVAC Training Manual and associated Student Study Guide/Lab Manual, Instructor's Guide and DVD Series will be used as teaching tools. The ExamView test development program, its applications and how to teach with these tools will be demonstrated. This course, which also focuses on developing classroom presentation skills, will prepare students to teach an introductory HVACR familiarization course to people who have limited HVACR experience. Limited to United Association program participants.

UAT 266 Air and Water Balance 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, UA instructors will be equipped with presentations, resources and hands-on demonstration and evaluation exercises to conduct HVAC Start-Test and Balance training as well as methods of teaching about air and water balance. The principles of teaching heat transfer and fluid flow as related to hydronic balancing and system performance as well as electrical testing and measurement will also be covered. The installation, maintenance, repair and operation of system components such as fans, pumps, duct systems and hydronic piping systems will also be discussed. Limited to United Association program participants.

UAT 267 Advanced HVAC & R Troubleshooting 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course covers methods of teaching about Electrical and Refrigerant Controls as they apply to heating ventilation, air conditioning and refrigeration technologies. This course demonstrates the use of the psychrometric properties of air in practical troubleshooting applications and various skills will be demonstrated in the classroom and on working equipment. Several psychrometric charts will be presented to clarify theory and practical applications. Limited to United Association program participants.

UAT 268 Technical Classes for Sprinkler Fitters 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn to teach the mechanics, protocols and proper techniques of sprinkler fitting and the adaptation of various codes and product changes in the fire sprinkler industry. Topics include teaching about fire sprinkler alarms, fire sprinkler spray patterns, sprinkler inspections, lift training, technical changes to NFPA and water mist. Students must have prior experience with sprinkler fitting before enrolling in this course. Limited to United Association program participants.

UAT 269 Medical Gas 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course covers methods of teaching about the codes and standards that govern medical gas, medical-surgical vacuum piping systems installation and testing, requirements for installer qualification, and requirements for brazer qualification in accordance with ASME Section IX. A written exam will be administered at the end of the course. General and specific information needed to develop local medical gas training programs throughout the UA will be provided. Limited to United Association program participants.

UAT 269C Canadian Medical Gas Instructor Training 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course is designed to certify medical gas instructors in the delivery of the content required by the Canadian Standards Association (CSA) Code Z-7396.1.09. This code is required for all medical gas installations in Canada to be undertaken by licensed Plumbers or Steamfitters who must show documented proof of training in the CSA code. Limited to United Association program participants.

UAT 270 Properties of Metals 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching the properties and characteristics of metals commonly used in the pipe trades. Emphasis will be given to explaining the nature of ferrous and non-ferrous metals in both their raw and manufactured form, the physical and mechanical properties of common metals and the processes used to create desired changes. Limited to United Association program participants.

UAT 271 Steam Heating Systems 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course covers methods of teaching about steam heating systems. Topics to be covered include: the identification, modification, installation and troubleshooting of steam heating systems; properties of saturated steam; piping of heat exchange equipments; and fluid draining. Boiler basics, co-generation and the role steam plays in the production of electricity will also be discussed. Limited to United Association program participants.

UAT 272 Wire Feed Orbital Welding 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students will learn methods of teaching wire feed orbital welding. Topics include teaching wire feed orbital equipment capacity/capabilities and their accessories; installation and set-up of equipment; machine and weld head calibration; weld joint design; tack-up; weld preparation; and welding parameters. Students taking this class should already be well versed in orbital tube welding. Limited to United Association program participants.

UAT 273 Introduction to the Transit and Level 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 5 other, 29 total contact hours

In this course, students will learn about methods of teaching the use of the Transit, the Builder's Level, the Rotating Laser Level, the Pipe Laying Laser Level and their relationship to other surveying equipment. Practical and new job applications will be covered, such as learning how to set up and use the instruments, transferring of elevations, running a level net to prove that elevations are correct and the proper set-up of pipe and rotating lasers. Students will develop and present an original lesson to teach instruments and concepts presented in the course. Limited to United Association program participants.

UAT 274 Oxy-Fuel Cutting and Welding 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching oxy-fuel safety, welding, layout and cutting procedures. Students will demonstrate proper techniques and procedures employed in successfully teaching this subject. Each student will have the opportunity to try the methods being discussed. The technical aspects of teaching as well as the practice of cutting and welding pipe with oxy-fuel will also be covered. Students selecting this course should come to class in safe working clothes. The title of this course was previously Oxy-Acetylene Cutting and Welding. Limited to United Association program participants.

UAT 275 Trade Related Trigonometry 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching the principles of trade-related trigonometry. Following a review, students will discuss and develop skills to instruct on topics such as trigonometry, application of a right triangle, Pythagorean theorem, rolling offsets (including cut-downs/degree of roll), equal spread offsets and miter joints. Teaching techniques will be addressed and problematic areas will be discussed to provide student instructors with ideas for their own classrooms teaching. Limited to United Association program participants.

UAT 276 Orbital Tube Welding 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching orbital fusion welding as used in semiconductor, food and beverage, pharmaceutical and biotechnology industries. This course is designed for students with a TIG welding background. Limited enrollment permits extensive hands-on welding time on the equipment. Students selecting this course should come to class in safe working clothes. Limited to United Association program participants.

UAT 277 GTAW - Wire Feed Machine Welding 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course provides the welder/operator a basic understanding of the orbital pipe welding process. The course introduces the theory of operation, technology comparison of analog and microprocessor-controlled systems, equipment set-up and safety issues. The course features the Liburdi/Dimetric GTAW wire fed machine welding equipment. Limited to United Association program participants.

UAT 278 GTAW Wire Feed Welding 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students will learn methods of teaching the Gold Trac GTAW wire feed machine pipe welding process at the local level. This course introduces the operation, technology, comparison of analog and microprocessor-controlled systems, hot wire welding and equipment set-up and safety issues. Additionally, the course covers process variables, system programmer control functions, weld parameter selection and development and Dimetrics power supplies such as GT2. Limited to United Association program participants.

UAT 278B Teaching Wire Feed Welding 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course focuses on training the trainer and will provide the student with an understanding of how to teach the orbital wire feed welding process at the local level. Topics cover the operation, technology, equipment set-up and safety issues associated with these types of advanced welding systems. Additionally, the course includes process variables, system programmer control functions, weld parameter selection and gives the theoretical basis for weld program development. The course is structured to provide students a hands-on training approach using the AMI 227 and Liburdi Gold Track orbital wire feed welding systems. Limited to United Association program participants.

UAT 279 UA Certified Machine Cutting, Severing, and Beveling 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course is designed to teach the Journeyperson how to machine the many different joint designs used in our industry today. Each student is required to have a calculator, ruler, paper and pencil, safety glasses and attend class in safe working clothes. To receive UA certification in this course, each journeyperson is required to pass a practical and written exam. Limited to United Association program participants.

UAT 280 Aluminum Pipe Welding (GTAW) 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn to teach aluminum pipe welding utilizing the Gas Tungsten Arc Welding (GTAW) Process. The main focus will be on teaching welding aluminum pipes in all positions. This course is supported by various technical presentations of industry representatives. Enrollment shall be limited to those who have a minimum of five years of GTAW experience. Limited to United Association program participants.

UAT 281 Gas Installations 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching gas installations utilizing gas trainers that simulate the operation of appliances and electrical control systems. Topics include gas codes, burner management, flame sensing systems, valves and regulators and electrical control systems. Limited to United Association program participants.

UAT 282 Plastic Welding 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about advances in plastic welding and fusion processes. In addition, they will be introduced to methods of teaching the certification classes for the UA-PE1 and UA-PE2. The practical focus will be on welding plastic pipes in all positions. Topics, such as welding flat plate in horizontal and vertical positions, welding schedules in all positions, backwelding glued joints and electro fusion methods, will be reviewed. Students will test for certification in the UA-PE1 and/or UA-PE2 procedures. Limited to United Association program participants.

UAT 283 Art of Tube Bending 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching the art of tube bending. Topics covered include parts of a bender, the bending process, setbacks as they relate to any bend and the layout of bends. Students will develop methods of teaching topics such as the layout, common mistakes and correction of single bend errors, explain the use of props, line up, leveling of tubing in the bending process, isometric drawing, wire templates, numbering the bending order. Maintenance and repair of bending equipment will be reviewed. Safety concerns at the bending table will also be discussed. Limited to United Association program participants.

UAT 284 Gas Metal Arc Welding 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching the techniques of gas metal arc welding (GMAW). Safety, set-up and minor maintenance and repair of GMAW equipment, selection of project consumables, selection of the proper gases and troubleshooting techniques will be emphasized. Hands-on welding instruction demonstrations will be given on plate and pipe in all positions. Specialized applications of flux core, metal core, aluminum and pulse MIG will also be presented. Limited to United Association program participants.

UAT 285 ASME B31.3 Process Piping 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching the ASME B31.3 Process Piping Code. B31.3 scope, materials, fabrication & erection, inspection, examination and testing will be covered, as well as mechanical behavior, welding metallurgy, basic piping design, cathodic protection and piping for Category M Fluid Service. Students selecting this course should have a strong background in metallurgy, welding, and piping fabrication. Limited to United Association program participants.

UAT 286 Industrial Refrigeration Trainer 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching basic commercial refrigeration concepts using the Hampden Industrial Refrigeration Trainer (IRT). Topics include operating and servicing large industrial systems requiring water-cooled condensers; electric and hot gas defrost systems; cooling towers; hot bypass capacity control systems; crankcase pressure regulators; crankcase heaters; and pressure pumps. Limited to United Association program participants.

UAT 287 R410A Safety and Training 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching to provide training and certification for the proper safety, handling and application of R410A refrigerant. Students will be informed on how they can become a proctor as well as how to administer the Universal R410A Safety & Training Exam in their home Local Union. Topics to be covered include: R410A test preparation, thorough knowledge of the R410A equipment and use of the online ESCO Institute webpage for proctors. Limited to United Association program participants.

UAT 288 Shielded Metal Arc Welding 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will update their skills and learn methods of teaching Shielded Metal Arc Welding (SMAW) and Oxy-Fuel Cutting & Welding. Topics include welding shop safety, types and proper operation of the welding machines used in SMAW, and welding types of electrodes and their make-up. Class size is limited to allow as much rod time as possible. Students selecting this course must come to class in safe working clothes. Limited to United Association program participants.

UAT 289 Electrical Diagrams in HVAC 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn alternative methods of teaching HVAC electrical diagrams. The course focuses on using a software program called "The Constructor." Students will learn how this software works, how to interpret electrical diagrams using this new software and how to apply it in teaching HVAC apprentices. Limited to United Association program participants.

UAT 290 Gas Tungsten Arc Welding 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching Gas Tungsten Arc Welding. Course content consists of welding pipe in the 2G, 5G and 6G positions. Topics of instruction include the use of consumable inserts and the cup-walking technique on carbon and stainless steel. Square Butt Fusion procedures, used in the food and drug industry, will also be discussed. Enrollment will be limited to experienced welding students only. Students selecting this course must come to class in safe working clothes. Limited to United Association program participants.

UAT 291 Residential Refrigeration UA STAR 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course covers methods of teaching how to conduct a review for the Residential and Light Commercial Refrigeration UA STAR exam. All of the categories covered by the exam will be reviewed. Students will use the UA Interactive On-Line Curriculum to download the Residential and Light Commercial Refrigeration UA STAR review materials. Web-based STAR review classes will also be discussed. Limited to United Association program participants.

UAT 292 Pipefitting Layout 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods used to teach pipefitting layout techniques utilized in the field without using math or manuals. This is a hands-on class, so students are encouraged to wear jeans as they will be working on the floor. The mitering of pipes and fittings and the fabrication of specialty tools for the trade will also be covered. Limited to United Association program participants.

UAT 293 Commercial Refrigeration UA STAR 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course covers methods of teaching about how to conduct a review for the Commercial Refrigeration UA STAR exam. All of the categories covered by the exam will be reviewed. Students will use the UA Interactive On-Line Curriculum to download the Commercial Refrigeration UA STAR review materials. Web-based STAR review classes will also be discussed. Limited to United Association program participants.

UAT 294 Plumbing Service I 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching plumbing service. Topics include the operational, installation, and safety aspects including troubleshooting and repair of fixtures, flush valves, sewer systems, faucets, appliances, and electronics in the plumbing industry. Aspects of customer relations and marketing will be reviewed. This course will address the employer, employee relationships, and standard company policies of the plumbing industry. Limited to United Association program participants.

UAT 294B Plumbing Service II 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; UAT 294 minimum grade "B"

22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course continues instruction on customer service and marketing skills in the residential and commercial plumbing industry. Students will review and examine the local U.A. Plumbing Service Curriculum. Throughout this advanced training, students will identify new opportunities with up-to-date, high-tech, plumbing fixtures, products, tools, equipment, safety and green technology in the plumbing industry. Methods of teaching customer communication, social styles, salesmanship, marketing and the calculating the cost of doing business will also be addressed. Limited to United Association program participants.

UAT 295 UA STAR Plumbing Review 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching how to conduct the review course for the Plumbing UA STAR Certification Exam. All of the categories covered by the exam will be reviewed for content and to develop teaching strategies. Students will use the UA Interactive On-Line Curriculum to download the UA STAR plumbing review materials. Web-based STAR review classes will also be discussed. The final 4 hours of the class will be an actual NITC proctored UA STAR Plumbing exam. Limited to United Association program participants.

UAT 296 UA STAR HVACR Review 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching how to conduct a review for the HVAC & R UA STAR Plumbing certification exam. All of the categories covered by the exam will be reviewed. Students will use the UA Interactive On-Line Curriculum to download the HVAC & R UA STAR review materials. Web-based STAR review classes will also be discussed. The final 4 hours of the class will be an actual NITC proctored HVAC & R UA STAR Plumbing exam. Limited to United Association program participants.

UAT 297 Sprinkler Fitter UA STAR 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course covers methods of teaching about how to conduct a review for the Sprinkler Fitter UA STAR exam. All of the categories covered by the exam will be reviewed. Students will use the UA Interactive On-Line Curriculum to download the Sprinkler Fitter UA STAR review materials. Web-based STAR review classes will also be discussed. Limited to United Association program participants.

UAT 298 UA STAR Pipefitting Review 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching how to conduct an 18.5 hour review for the UA STAR Steamfitting/Pipefitting certification exam. All categories covered by the exam will be reviewed. Using the UA interactive online curriculum to download the review materials and practice exams will be covered. Web-based STAR review classes will also be discussed. The final 4 hours of the class will be an actual NITC proctored UA STAR Steamfitting/Pipefitting exam. Limited to United Association program participants.

UAT 299 ATR Refresher Training 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn how to conduct and how to teach an Authorized Testing Representative (ATR) refresher training for the UA Welder Certification Program. Emphasis will be placed on program changes and their effects on Local Unions' implementation of the system requirements. A written examination will be administered to evaluate students' understanding and capability to implement program requirements. Limited to United Association program participants.

UAT 305C Canadian Green Building 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course includes four main topics: Leadership in Energy and Environmental Design, understanding high efficiency buildings and sustainable design, development of a training program for delivery of up-to-date local membership skills for the green building revolution, methods and strategies for identification and targeting of work in the green building sector for the future. Limited to United Association Instructor Training program graduates.

UAT 307 Interactive Teaching 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This class will build on the professional classes offered during the first five years of the UA Instructor Training Program specific to fire sprinkler fitter instructors. The class will help our instructors combine presentation skills with technical knowledge. Topics include new and more effective techniques on how to: effectively engage their audience, create individual and group discussion, structure classroom set-up to be more conducive to individual participation, disengage problematic or disruptive participants, manipulate the lesson plan to fit a set time frame and create participant interaction. Limited to United Association Instructor Training program graduates.

UAT 308 Industrial Refrigeration Market 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will be updated on the set-up, planning and organization needed in the industrial/commercial refrigeration industry. In addition, they will develop methods of teaching about industrial/commercial refrigeration. Topics covered will include system design and utilization, case-cooler-end product refrigerating principles, system troubleshooting and start-test and balance. Of important inclusion will be the EPA's new "GreenChill" (supermarket refrigeration) program, its move into the industry, and how field technicians can assist the customers in qualifying and re-certifying buildings for the program. Limited to United Association Instructor Training program graduates.

UAT 309 Combustion Analysis 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This sustainable energy course is designed to educate UA instructors on the essential information required to train apprentices and journeymen on achieving higher fuel efficiencies, better system performance and reduced greenhouse gas emissions by performing and understanding combustion analysis. It is necessary to perform a combustion analysis on all combustion systems to ensure safe operation at peak efficiency. Upon successful completion and assessment, participants will receive a certification that attests to their knowledge of combustion analysis and carbon monoxide safety. Limited to United Association Instructor Training program graduates.

UAT 310 Setting Up HVACR Programs 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn the procedure for starting new HVACR programs at the local school. Topics include the scope of the industry, the market requirements of the geographical areas and the physical equipment, tools, supplies and manpower requirements for an HVACR program to be successful. Limited to United Association Instructor Training program graduates.

UAT 311 Confined Space 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students will receive a five-day training that is a combination of OSHA's (#2260) 3-day classroom-based confined space course on OSHA's General Industry Standard with CPWR's 2-day hands-on simulated entry training. Topics include legal issues, permit programs, ventilation and rescue as well as workshops on confined space hazards and classification of spaces. CPWR's Hands-on training includes air monitoring, ventilation, supplied-air respirator (SARs), self-contained breathing apparatus (SCBAs), entry procedures, retrieval and other aspects of permit-required confined space entry. Participants who complete the course will receive an OSHA 2260 Certificate, a CPWR 16-hr Confined Space Certificate and a CPWR Train the Trainer Certificate. Limited to United Association Instructor Training program graduates.

UAT 312 Energy Auditing and Retrofit 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course will cover how the sustainable energy movement is using the energy retrofit process to meet the goal of making buildings efficient. All steps in the energy retrofit process will be covered with emphasis on the audit and Energy Conservation Measures (ECM) portion of the process. Also, the instruments used in the audit process as well as the engineering concepts of developing ECM will be covered. Limited to United Association Instructor Training program graduates.

UAT 320 History of the Labor Movement 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn to teach the history and heritage of the Labor Movement into the 1920s. It is built on the narratives of working people and their leaders creating enduring institutions. It is a story of crises, courage, and innovation that spans approximately 350 years from organized colonial craftsmen to workers confronting the global economy in the 21st century. Limited to United Association Instructor Training program graduates.

UAT 321 Labor History and the UA: 1920 to Present 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; UAT 320 minimum grade "C"
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching about the labor history and the UA from the 1920s to the present. This course continues the narratives of working people and the leaders who created enduring labor institutions. UAT 320, History of the Labor Movement, is a prerequisite for this course. Limited to United Association Instructor Training program graduates.

UAT 322 Labor History in the UA 1800 to Present 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students learn about and develop methods of teaching the struggles of the labor movement as it relates to the UA from 1800 to the present. The labor movement is the story of crises, courage and innovations that spans 350 years from colonial craftsmen into the twenty-first century. Special attention is paid to more recent history from the 1920's to the present day focusing on the creation and growth of the UA. Students will develop lessons plans incorporating events and people that have played an important role in labor history. Limited to United Association Instructor Training program graduates.

UAT 325 Industrial Rigging 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students will learn methods of teaching about industrial rigging. This course has a theoretical and a practical component covering the best rigging practices, calculating centers of gravity, sling stress, crane set up, and the use of tuggers, jacks, and rollers. There will be a written exam along with the performance exam, which upon passing the student will receive a UA/EPRI certification for industrial rigging as well as a rigging course CD and example workbook. Limited to United Association Instructor Training program graduates.

UAT 331 Energy Auditor Certification 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Open only to graduates of the UA Instructor Training Program; Green Awareness Certification; Highly recommended: UA HVAC Star Certification
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

The purpose of this course is to certify UA instructors in energy efficiency technologies and prepare them to train and certify members in their home local. Students will learn to accumulate and evaluate practical data related to energy usage in residential and commercial buildings and prepare a certified audit containing energy analysis results and recommendations for energy cost savings. Upon successful completion of this course, participants complete a written exam and performance evaluation that attests to their knowledge of energy efficient technologies based on manufacturers' performance data, legislation related to energy mandates, blower-door testing, thermography and identification of energy saving measures. Limited to United Association Instructor Training program graduates.

UAT 343C Canadian Green Construction 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

The UA Canada Green Construction course teaches instructors to prepare trades persons/workers to participate fully in Green/Sustainable Construction projects in Canada. Topics include the Integrated Green Project Team concept, the Green Building Standards rating system, identifying critical practices on sustainable project sites and project management for Green Construction for foremen and supervisory personnel. The course will serve as a prerequisite to qualify to write LEED Green Associate Professional for GaGBC credentials. Limited to United Association Instructor Training program graduates.

UAT 344C Canadian Steamfitter Red Seal 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course will teach participants to deliver instruction on the requirements for the Canadian Steamfitter Interprovincial Red Seal course. The students will take an in-depth look at the Red Seal Program, National Occupational Analysis and various provincial statutes that regulate worker certification, as well as instructional materials required to deliver this program. Instructors that take this course should have experience in the Steamfitter trade in order to meet the requirements for delivery of this course and successfully challenging the examination. Limited to United Association Instructor Training program graduates.

UAT 351 Plumbing Codes 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students learn about methods of teaching the development, technical comparison, interpretation and practical application of model plumbing and mechanical codes. Also included is the history and development of plumbing codes and the development of the two models of plumbing codes in the Plumbing Code Application Manual and related CD. The UA Plumbing Code Manual will be used as the base document. Limited to United Association Instructor Training program graduates.

UAT 352 Residential Fire Protection Systems Certification for Installers 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Open only to graduates of the UA ITP with plumber or sprinkler fitter journey status
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students prepare to successfully pass the ASSE Series 7000 Installers Certification exam and develop methods of teaching this material. Students will learn about plumbing related to the fire protection systems used for one- and two-family dwellings. Topics include general residential plumbing, basic fire science, approved residential fire sprinklers and other approved plumbing products for fire protection. Students are also provided with a working knowledge of location, sizing and installing residential fire protection systems. Limited to United Association Instructor Training program graduates.

UAT 353 ASME Section IX Welding Code 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn to teach welding procedure specifications and welder qualifications in accordance with Section IX of the ASME Code at their local. Participants will be able to apply the rules of Section IX as they pertain to the development of welding procedure specifications and welder qualifications. A logical approach to compliance with Section IX is discussed and implemented in an open workshop environment. Limited to United Association Instructor Training program graduates.

UAT 355 Quality Control Inspection 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, current American Welding Society (AWS) Certified Welding Instructors (CWI) will learn the duties and responsibilities of a Quality Control Inspector (QC) in the piping and boiler industry and prepare to train students as QC Inspectors for work in the construction/fabrication industry. Record keeping and documentation, welding documents, interaction with regulatory agencies and other governing bodies, QC trend analysis and the process for obtaining the ASME and NBIC code stamp authorizations will be covered. Participants should be American Welding Society Certified Welding Inspectors or working toward certification. Limited to United Association Instructor Training program graduates.

UAT 356 Corrosive Resistant Alloys 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will develop methods of teaching that focus on the procedures and techniques utilized in welding corrosion resistant alloys such as high nickel alloys. As the piping industry turns to the use of these materials, students train their members to develop the skills necessary to address the industry's welding needs. Students must provide their own personal safety equipment. Limited to United Association Instructor Training program graduates.

UAT 357 TIP TIG Wire Feed Welding Process 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, designed for UA Welding Instructors, students will learn about and develop methods of teaching the GTAW Hot Wire (HW) Feed TIP TIG welding process. Students will learn the safety, operation, technology and equipment set-up associated with this advanced welding system. Students will learn process variables, system control functions and weld parameter selection for a variety of materials. Enrollment shall be limited to instructors with a minimum of 5 years of experience with the GTAW/GMAW process. Limited to United Association program participants.

UAT 358 Cross Connection Control 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students will learn about surveys and inspections of cross connection control to become ASSE Surveyor Certified and instruct apprentices at their local union. Topics include: identifying cross-connections; understanding how backflows occur; methods used to control backflows; recommended applications for each type of backflow assembly; interpreting plumbing codes and local ordinances; and inspecting a facility for cross-connections. Exercises include reviewing plans and going to an actual site to do a survey inspection for cross-connection control in addition to developing strategies for teaching these topics. Limited to United Association Instructor Training program graduates.

UAT 362 Valve Repair Recertification 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn to teach how to conduct a Valve Repair Recertification Program using the Quality System Manual. Emphasis will be placed on comprehending new industry standards on valve maintenance and repair techniques; precision measuring devices; hands-on review of valve disassemble; and documentations used for quality control. A written examination will be administered to evaluate students' understanding and capability to implement program requirements. Limited to United Association Instructor Training program graduates.

UAT 367 Advanced Air and Water Analysis 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course students will learn methods of teaching advanced air and water analysis. Students should have previous experience in Start, Test and Balance procedures. Topics include: advanced studies of psychometrics, pump and fan design, electrical power analysis, and the use of variable frequency drives. Limited to United Association Instructor Training program graduates.

UAT 369 Advanced Residential Training 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching administrative procedures for implementing the Residential Training program in the various local areas. Students will demonstrate maintenance and repair procedures while teaching advanced residential training. They will also learn how recruiting, promoting and training differ from the regular apprentice training programs. Limited to United Association Instructor Training program graduates.

UAT 371 Crane Signalperson Training and Certification 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course uses the OSHA Signalperson Training Program, which is a state of the art interactive signalperson training aid. The course covers all pertinent requirements of the current OSHA 1926.550, ASME B30.5, B30.23, and even the proposed OSHA Cranes and Derrick Standard 1926.1400. The course covers theoretical and practical components of signaling and crane characteristics and limitations. This course uses instructor materials which include practice scenarios so that signaling becomes second nature to students. Certification and Examiner (proctor) credentials are awarded upon successful completion of the course. Limited to United Association Instructor Training program graduates.

UAT 390 Operation of a UA Training Program 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course covers methods of teaching about how to provide local union coordinators, directors, and Joint Apprenticeship Training Committee members with the background and knowledge necessary to operate today's UA's local training programs as well as to provide policy and guidance developing local standards of apprenticeship for approval and registration. Limited to United Association Instructor Training program graduates.

UAT 391 Coordinators' Yearly Update 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course covers methods of teaching about important administrative concerns and issues affecting the local union Joint Apprenticeship and Training Committee. Each section addresses current events and new concepts in the area of training. Students are encouraged to bring questions concerning their local union Joint Apprenticeship and Training Committee for discussion. Limited to United Association Instructor Training program graduates.

UAT 393 Canadian Coordinators' Update 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course is designed to provide Canadian Local Union Directors/Training Coordinators with information about important administrative updates, concerns, and issues affecting the local unions so that they will be able to share this knowledge with others. Each course module addresses the impact of current events and new regulations on apprenticeship training. Students are encouraged to bring questions concerning their local union Joint Apprenticeship and Training Committee for discussion. Limited to United Association Instructor Training program graduates.

UAT 395 UA Administrative Resources 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

The focus of this course is to teach Training Coordinators/Directors how to use technology to teach with Blackboard and Microsoft Office and to use everything available to them through the UANET. This course will focus on the apprentice registration process, the UA Smart System, and state and federal grants. Students taking this course should have a working knowledge of how to operate a computer. Limited to United Association Instructor Training program graduates.

UAT 397 Coaching Students with Challenges 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This teach-the-teachers course focuses on how to coach adult learner students who are coping with life's challenges. Topics to be covered includes: how to recognize students who are struggling academically or personally; how to offer support to students and refer them to appropriate personnel; and how to adapt to students' needs and learning styles. Participants will learn how to apply useful principles to course design as well as to address common, student-related issues that arise during classroom instruction. Limited to United Association Instructor Training program graduates.

Video Production VID

VID 105 Foundations in Digital Video I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

In this course, students are introduced to the basics of video production and editing. Students are guided through a series of demonstrations and hands-on exercises to develop their skills in production and editing. This course contains material previously taught in VID 101 and VID 110.

VID 125 Foundations in Digital Video II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 105 minimum grade "C+"
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This course provides students with hands-on technical experience in production, production aesthetics, and editing/post-production. The technical phase provides students with advanced skills to shoot with a camera, set up lights and manage audio-recording equipment. From pre-production to post-production, students will cover all aspects of producing projects from start to finish. This course contains material previously taught in VID 102 and VID 112.

VID 180 Television Studio I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

In this course, students are introduced to a television studio environment, where they will experience hands-on training and team-oriented tasks to complete three short productions. Studio floor positions cover studio lighting, 3-camera operating setup, microphone setups, the floor manager and set design. Control room duties include director, audio mixer, video switcher and digital graphics for on-screen effects. Students will rotate positions in each of these areas.

VID 185 Television Studio II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 180 minimum grade "C+"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This advanced studio techniques course continues technical training for the student, but with an added emphasis on application of the techniques. Students will develop original scripts and content for productions in formats such as talk shows, children's programming or documentaries. In-studio productions (that include field segments) will be created and broadcast for web streaming.

VID 200 Lighting for Video 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students gain hands-on experience with lighting for video through the exploration and application of multiple lighting effects. Areas covered include manipulation of light using filters, color temperatures and white balance and use of lighting equipment. Safety procedures as well as many other topics consistent with improving the ability to communicate more effectively using lighting in video are discussed. The title of this course was previously Lighting.

VID 203 Web Video 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125 may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will create and customize a basic Web page to showcase their projects, demo reel, and peripheral projects that relate to multimedia. Students also produce three short commercial video projects to showcase on their completed Web page.

VID 210 Screenplays 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 105 and VID 125, minimum grade "C+"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the fundamentals of screenplay construction. The script construction process examines story, theme, character development, plot and scene structure, dialogue and action descriptions. This course requires the student to develop an entire screenplay intended for production in other advanced courses.

VID 220 Audio for Digital Video 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will learn the basic principles of audio engineering and gain practical, hands-on experience while working in video production environments such as television studio or location work. The focus will be on recording dialogue for TV or digital video, acoustics, microphones and basic electronics common to the video recording and mixing process. Students will complete video production/mixing projects and may choose to produce an extended scaled project that is written, produced, directed, shot and edited in the advanced courses.

VID 230 Directing for Video Production 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This introductory directing course breaks down the steps to approach a script and provide for creative style and development at each stage of the production process. Students will use an attention-to-detail approach - from preparing scenes, lighting and cinematography to working with actors. Additional study will include examination of various masters such as Orson Welles, Stanley Kubrick, and David Fincher.

VID 240 Digital Cinematography 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will gain hands-on experience in digital cinematography. Students will plan and practice camera techniques used for interior and exterior lighting, composition and framing, green screen techniques and other aspects of visual storytelling. Students will practice mechanical aspects of the lens: f-stops, depth of field and rack focus shots. Students will examine the works of masters such as Greg Toland, Conrad Hall, and Roger Deakins. Students may choose to produce an extended scaled project that is written, produced, directed, shot and edited in the advanced courses series.

VID 250 Advanced Editing 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed for the completion phase of the final thesis project. Editing aspects such as pacing, compositing, and special effects will be utilized for the final production project.

VID 255 Green Screen I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125
45 lecture, 0 lab, 0 clinical, 15 other, 60 total contact hours

In this course, students are introduced to in-studio projects utilizing green screen (or chromo key) effects. Students create virtual backgrounds, landscapes or atmospheres to stage against actors, activities or props in the foreground. This process includes lighting, filming and editing. The title of this course was previously Video Studio/Green Screen Effects.

VID 260 Green Screen II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 255
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this advanced techniques course, students will have the opportunity to write and create one or more original green screen videos by performing all aspects of production and post-production. Productions, with an emphasis on continuity and color matching, will be planned and shot with artificial environments involving the intricacies of full scenes.

VID 270 Documentary Video Production 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125 may enroll concurrently
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course provides students with skills to write, produce, direct and edit non-fictional videos. Students will be instructed on methods and hands-on-skills to construct a non-fictional story. This includes formulating a story with an angle, structure, content and style. Interviewing and researching methods are demonstrated through hands-on exercises. Students view/critique various contemporary documentaries as they relate them to their own projects. The title of this course was previously Documentary and Reality Videos.

VID 276 Video Graphics I 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125 or ANI 150, minimum grade "C"; VID 125 may enroll concurrently
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to motion graphics composition for film/video and internet distribution. Software, such as Adobe After Effects, is used as a tool to create motion graphics compositions. Students learn basic visual effects terminology, effect keying and transparency, keyframing, synchronizing compositions to music, compression codecs required for output optimization, and saving the finished composition to a variety of film/video and internet ready formats. Lecture, hands-on experience and creative mentoring are combined to develop motion graphics compositing skills. Students are exposed to examples of work from industry professionals for inspiration. This course was previously VID 299. The title of this course was previously Advanced Video Graphics I.

VID 277 Video Graphics II 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 276 minimum grade "C"
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students build upon the basic skills learned to produce advanced motion graphics compositions. Software, such as Adobe After Effects, is used to create motion graphics compositions. Students will create original work based on advanced concepts such as color-screen keying, particle effects, three-dimensional space, and geometric motion. Students will expand their ability to create motion graphics through critical review of work from industry professionals. The title of this course was previously Advanced Video Graphics II.

VID 295 Portfolio and Project Seminar 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125; and one of the following: VID 200, VID 255, VID 270 or VID 277, may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will develop skills to create a resume, compile a DVD demo reel and complete a final video thesis project. The demo reel is compiled based on previously completed student works. The demo reel will provide students with a professional portfolio to solicit work in the video production field. Each student will write, produce and direct a thesis project. The title of this course was previously Professional Portfolio.

Web Design & Development WEB

WEB 110 Web Development I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students learn web page creation using HTML5 and Cascading Style Sheets (CSS). Pages are authored in a text editor and published on a web server using an SFTP program. Major areas of emphasis include creating valid web pages, building an appropriate document structure and using modern formatting techniques. Credit by examination is available for students with prior industry experience; interested students should consult with a WEB faculty member. This course contains material previously taught in INP 150.

WEB 113 Web User Experience I 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students learn the principles and practices of user-centered design, as well as the fundamentals of information architecture and interface design for the Web. The focus will be on critical evaluation of existing Web sites and creating deliverables that a user experience professional would typically produce. Upon completion of this course, students will have a working knowledge of approaches, tools and techniques pertaining to a variety of Web topics such as content design, interface design, navigation, organization, labeling, search and site diagramming. This course contains material previously taught in INP 153.

WEB 115 Introduction to Interface Design 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will learn the fundamentals of how to design and structure Web interfaces. Using the basic tools and techniques of interface design, students will learn how to create digital interfaces. The focus of this class will be on how to design typical industry deliverables such as basic Web pages, HTML emails and marketing graphics as well as how to prepare digital designs for production. This course contains material previously taught in INP 152.

WEB 210 Web Development II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; INP 150 minimum grade "C" or INP 150 test minimum score 70% or WEB 110 minimum grade "C" or WEB 110 test minimum score 70%
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students learn advanced front-end coding and also are introduced to JavaScript and the DOM. The topics covered include media queries for responsive design, accessible web development using ARIA, CSS pre-processors, and front-end frameworks. Students will write valid, semantically accurate and accessible HTML5 code and will learn the basics of unobtrusive JavaScript. This course contains material previously taught in INP 170.

WEB 213 Web User Experience II 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; INP 153 or WEB 113, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will gain experience with methods for evaluating and improving Web site usability and accessibility. Students will use assistive technology to better understand how users with disabilities experience Web sites. Students will also explore the usability and accessibility of everyday devices. This course contains material previously taught in INP 203.

WEB 215 Intermediate Interface Design 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; INP 152 or WEB 115, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students focus on intermediate Web interface and design techniques that include contemporary layout styles and more complex preparation of images for Web development. Topics include designing for specific clients and audiences, alternate layout strategies and intermediate graphic and interface design principles. This class challenges students to incorporate different design strategies, technologies and Web styles into digital interfaces. This course contains material previously taught in INP 154.

WEB 230 Advanced JavaScript 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: Need to have working knowledge of HTML and CSS and should have prior programming experience.
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this advanced course in JavaScript for Web development, accessible, unobtrusive and standards-compliant coding techniques are stressed. AJAX, MVC, and HTML5 APIs will be given significant consideration. Students must be proficient in HTML5 and CSS and should have prior programming experience. The title of this course was previously Web Development III. This course contains material previously taught in INP 271.

WEB 233 Web Analytics and SEO 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; INP 150 or WEB 110; INP 153 or WEB 113; minimum grade "C" in all courses
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will learn about the technologies and techniques used to increase Web site traffic, as well as how to track user activity and evaluate the impact of Web site changes via analytics. Search engine optimization and the role of social and interactive media in driving user behavior are given significant focus. This course contains material previously taught in INP 233.

WEB 235 Advanced Interface Design 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; INP 170 or WEB 110; INP 182 or WEB 215; minimum grade "C" in all courses
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will build on their interface design skills by designing more sophisticated Web sites using more complicated techniques and tools of interface design. Additionally, students will code their designs using XHTML and CSS. Industry standard visual communication and coding practices are emphasized as students design and code browser-based computer and mobile Web interfaces. Using workshops, critiques and projects, students will evaluate, design and code to industry norms and trends.

WEB 250 PHP and MySQL 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will focus on PHP, MySQL for web development. Server-side concepts are stressed, including authentication, sessions, data storage and retrieval and modular web development. Students must be proficient in HTML5, CSS and JavaScript and should have prior programming experience. The title of this course was previously Web Development IV.

WEB 255 Interaction Design 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; INP 154, INP 182 or WEB 215, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will learn interaction design and development principles as they relate to mobile devices and multi-touch interactions. Students will create a series of interfaces that define interaction progress using interaction paths, task definitions and visual signaling with each design emphasizing the strengths of the current medium. Emerging industry trends and contemporary Web development methods will play a significant role in the design ideation and exploration process. This course contains material previously taught in INP 254.

WEB 263 Business Analysis and Project Management 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; WEB 210 and WEB 213, minimum grade "C" or instructor consent
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will focus on the principles and practices of business analysis and project management in the context of web application development. Students will author use cases and develop either paper or digital prototypes of applications, considering both waterfall and agile project management methodologies.

Welding & Fabrication WAF

WAF 103 Introduction to Gas Tungsten Arc Welding 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will be exposed to the gas tungsten arc welding (GTAW) process. The student will weld butt, lap and tee joints in the flat and horizontal positions on mild steel and aluminum. Welding vocabulary, theory and safety precautions will be discussed in the classroom. The student will apply safe work practices, welding techniques and theories related to the composition and properties of these metals. This class is not a requirement for the certificate, advanced certificate or associate degree in welding and fabrication. The title of this course was previously Heli-ARC Welding.

WAF 104 Soldering and Brazing 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

This course is designed to provide basic knowledge of soldering and brazing processes on copper tubing and fittings. Students braze butt, lap and tee joints on steel, and perform a variety of solder and braze joints on ferrous and non-ferrous materials. The student will apply safe work practices in the welding laboratory setting. The student's final copper tubing project will be pressurized to ensure proper soldering and brazing applications. This class is not a requirement for the certificate, advanced certificate or associate degree in welding and fabrication.

WAF 105 Introduction to Welding Processes 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

This is a basic welding class that introduces four welding processes; oxy-fuel welding (OFW), gas tungsten arc welding (GTAW), shielded metal arc welding (SMAW) and gas metal arc welding (GMAW). One cutting process is also explored; oxy-fuel cutting (OFC). The student will learn welding vocabulary, welding theory, safe handling practices and set-up of all related welding equipment. Students will weld using each process on ferrous or non-ferrous materials that are commonly used in industries such as automotive, manufacturing, structural and artistic sculpture work. The title of this course was previously Welding for Art and Engineering.

WAF 106 Welding Print Reading 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1; WAF 125 or WAF 126, minimum grade "C"; may enroll concurrently
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to print reading and drafting fundamentals and concepts. Students will learn to recognize and apply key terms, line types, dimensioning and tolerances and the different orthographic views while becoming skilled at interpreting AWS A2.4 standard symbols for welding, brazing and non-destructive examination. The title of this course was previously Blueprint Reading for Welders.

WAF 109 Welding Safety and OSHA Regulations 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students are introduced to the rights and responsibilities of an entry-level General Industry and Construction personnel along with the responsibilities of an employer. Course topics include hazard recognition, abatement, control and prevention. Several OSHA regulations topics will be covered, such as electrical safety, fall protection, welding, machine guarding, Worker's Compensation Law, power industrial truck operation, personal protection equipment and HAZMAT. Students that complete the course can receive an OSHA-10 certificate in General Industry and Construction along with a certification in power industrial truck operation. The title of this course was previously OSHA General Industry and Construction Site Safety and Regulations.

WAF 115 Oxy-Fuel Gas Cutting and Welding for Ironworkers 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours

In this course, students will be introduced to Oxy-Fuel Gas Cutting and Welding, Soldering and Brazing processes and how they apply to the Union Ironworker trade in an industrial environment. The student will learn to apply Oxy-Fuel Welding (OFW) to various joint designs in all positions, apply proper Oxy-Fuel Cutting (OFC) techniques on carbon steel plates and structural shapes in multiple positions and perform soldering and brazing on copper plate and tube. Welding vocabulary, welding theory, safety precautions and safe work practices will be covered along with an introduction to standard welding symbols. This class is a required part of the regional Ironworker Local Union pre-apprentice certificate.

WAF 116 Shielded Metal Arc Welding for Ironworkers 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours

In this course, students will be introduced to the Shielded Metal Arc Welding (SMAW) and the Carbon Arc Cutting and Gouging (CAC/G) processes and how these processes are applied in the Union Ironworker Trade. The student will learn to apply Shielded Metal Arc Welding to various joint designs on carbon steel plates and structural shapes in multiple positions and properly perform CAC/G techniques on carbon steel using multiple diameter electrodes that are manufactured. Welding vocabulary, welding theory, basic electricity, personal protective equipment, (PPE), equipment troubleshooting, safety precautions and safe work practices will be covered along with an introduction of weld quality. This class is a required part of the regional Ironworker Local Union pre-apprentice certificate.

WAF 117 Flux Cored Arc Welding for Ironworkers 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours

In this course, students will be introduced to the Flux Cored Arc Welding (FCAW) process and gain the understanding of how this process is applied in the Union Ironworker Trade. Students will learn to apply FCAW to various joint designs, on carbon steel plates and structural shapes in multiple positions, using self-shielded and gas shielded filler wire. Welding vocabulary, welding theory, basic electricity, personal protective equipment (PPE), equipment troubleshooting, welding symbols, safety precautions and safe work practices will be covered along with discussing the various consumables used in FCAW and their applications. This class is a required part of the regional Ironworker Local Union pre-apprentice certificate.

WAF 125 Introduction to Welding Processes I 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; WAF 109 minimum grade "C", may enroll concurrently
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are given an introduction to the following welding processes: Oxy-Fuel Welding (OFW), Oxy-Fuel Cutting (OFC), Brazing, Gas Tungsten Arc Welding (GTAW) on carbon steel, aluminum, stainless steel plate and sheet metal. This will include the Flat (1G/F) and horizontal (2G/F) positions. Surfacing (Pad welding) will also be performed in the GTAW process.

WAF 126 Introduction to Welding Processes II 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; WAF 109 minimum grade "C", may enroll concurrently
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the following welding processes: Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW) and Flux Core Arc Welding (FCAW). Multiple weld joints are covered in the flat (1F/G) and horizontal (2F/G) positions on plate and sheet metal.

WAF 130 Shielded Metal Arc Welding (SMAW) 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1; WAF 109 minimum grade "C", may enroll concurrently; WAF 126 minimum grade "C"
30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours

In this course, which expands on the Shielded Metal Arc Welding (SMAW) process, students are introduced to all position welding on various joint designs. Other topics in the course include AWS electrode identification, classification and proper weld positioning. Students will apply techniques taught in the course when welding structural shapes and pipe. This course contains material previously taught in WAF 112.

WAF 131 Thermal Cutting, Gouging and Weld Repair 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; WAF 109 minimum grade "C"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the following cutting and gouging processes: Oxy-fuel cutting (OFC), Gouging, Plasma Arc Cutting (PAC), Plasma Arc Gouging, Carbon Arc Cutting (CAC), Carbon Arc Gouging, Oxygen Lance Cutting and Gouging. These processes will be applied to plate, sheet metal and pipe.

WAF 139 Basic Metal Fabrication 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1; WAF 106, WAF 109, WAF 125 and WAF 126, minimum grade "C"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the principles and practices of metal fabrication and the proper and safe use of various pieces of metal fabricating equipment. Students will apply fabrication techniques of drafting and print reading, layout, assembly, tacking and welding to manufacture basic metal projects. This course contains material previously taught in WAF 227.

WAF 140 Inspection and Testing 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1; WAF 109, WAF 125 and WAF 126, minimum grade "C"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the most common types of weld inspection and testing methods. Destructive testing methods include bend tests, tensile pulls, charpy V notch and macro etch tests with non-destructive methods focusing on visual, dye penetrant, ultrasonic, magnetic particle and radiographic testing. Welding code acceptance criteria will be interpreted and applied to testing methods where applicable.

WAF 150 Automated Welding and Cutting 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1; WAF 140, WAF 232 and NCT 120, minimum grade "C"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to basic robotic welding and cutting. Safety, set- up, programming and industry applications are covered. Students will be exposed to 5 and 6 axis robotic applications of GMAW, Laser, Spot and Resistance welding as well as Plasma, Laser and Water Jet Cutting methods. This course contains material previously taught in WAF 229.

WAF 174 WAF Co-op Education I 1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career related work experience.

WAF 210 Welding Metallurgy 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; WAF 140 and WAF 232, minimum grade "C"

45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will be introduced to grain structure, atomic structure and phase transformations. They will recognize and illustrate the various aspects of extractive, mechanical and physical metallurgy including the theory and practice of metal identification, selection, processing, fabrication, conditioning and testing of ferrous and non-ferrous materials. Heat treating of various common industry materials will be discussed and students will analyze the root cause of weld failure and identify solutions.

WAF 230 Advanced Shielded Metal Arc Welding (SMAW) 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1; WAF 130 minimum grade "C"

30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours

In this course, students further develop their Shielded Metal Arc Welding (SMAW) skills by learning the American Welding Society (AWS) codes and standards and applying them to welds being performed. Students will perform sheet, plate, "C" channel and "H" beam welds in all positions as well as pipe welding in the 5F/G and 6F/G positions using multiple electrodes. The title of this course was previously Welding IV Advanced ARC (SMAW) and contains material previously taught in WAF 124.

WAF 231 Gas Tungsten Arc Welding (GTAW) 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1; WAF 125 minimum grade "C"

30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours

In this course, students further enhance their Gas Tungsten Arc Welding (GTAW) skills by performing advanced welding techniques most commonly used in the aerospace, manufacturing and automotive industries. Materials, such as, carbon steel, aluminum, stainless steel, copper and cast iron will be used. Multiple passes will be required using positions such as 2F/G, 3F/G, 4F/G, 5F/G, 6F/G on sheet, plate and pipe. Students will apply filler metal classification and specifications, codes and standards set forth by the American Welding Society (AWS). This course contains material previously taught in WAF 215.

WAF 232 Semi-Automatic Welding Processes 4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1; WAF 126 minimum grade "C"

30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours

In this course, students enhance their welding skills in the Gas Metal Arc Welding (GMAW), Flux Cored Arc Welding (FCAW) and Metal Cored Arc Welding (MCAW) processes by performing advanced welding techniques most commonly used in the manufacturing, automotive and construction industries. Other topics include filler metal classification and specifications, codes and standards set forth by the American Welding Society (AWS). This course contains material previously taught in WAF 288.

WAF 233 Submerged Arc and Flux Core Arc Welding 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; WAF 232 minimum grade "C"

30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the Submerged Arc Welding (SAW) and Flux Core Arc Welding (FCAW) processes with automated and semi-automated wire feed systems. Safety, set-up, programming, industry applications as well as AC/DC polarities, waveform technology and applications on longitudinal (plate) and circumferential (pipe) are demonstrated.

WAF 239 Advanced Metal Fabrication 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; WAF 139, WAF 210, WAF 230, WAF 231 and WAF 232, minimum grade "C"; WAF 210 may enroll concurrently

15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

In this capstone course, students will utilize various skills they have learned throughout the program. Students will be required to utilize their print reading skills to interpret a blueprint, layout a project, cut material, bend, drill, mill, assemble and weld projects in accordance with specifications on the blueprint. Group and individual projects may be required.

WAF 290 Advanced Training and Weld Certification 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; WAF 124, WAF 215 or WAF 288, minimum grade "B"

30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students will improve their command of welding processes, advance their welding skills and perform welds to the high standards established by the American Welding Society (AWS). The theory and skills needed for certification in specific welding vocations will be covered. Visual inspection of weld discontinuities along with the requirements and duties of the certified welding inspector are discussed. Successful students will perform welding tasks that meet AWS and ASME standards for an industry certification.

Yoga YOG

YOG 101 Yoga I 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies fundamental disciplines and postures in yoga. The title of this course was previously Introduction to Hatha Yoga.

YOG 102 Yoga II 2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; YOG 101 minimum grade "C"

0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course is a continuation of the introduction and application of fundamental disciplines and postures in yoga. The title of this course was previously Philosophy and Practice of Yoga.